AMERICAN
STATISTICAL ASSOCIATION.

NEW SERIES, No. 91. SEPTEMBER, 1910.

INTERNATIONAL CROP-REPORTING SERVICE.

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The collection of agricultural statistics on a more uniform plan and the interchange between different countries of the results of such statistical inquiries, has been a subject of great interest to statisticians and economists for the last half century. Four international organizations have been actively engaged in the study of agricultural statistics:

1. International Statistical Congresses, 1853–1876
2. International Agricultural Congresses, since 1873
3. The International Statistical Institute, since 1885
4. The International Institute of Agriculture, since 1909

1. Before the formation of the International Statistical Institute which took place in 1885, a series of *International Statistical Congresses* was held, dating from the Brussels Congress of 1853. At this very first meeting resolutions were passed defining the object of agricultural statistics as being, "to ascertain such facts as will give a complete knowledge of the conditions, the progress, and the results of the agricultural industry of a country at a certain period"; and proposing several important statistical undertakings in the different countries, with the object of securing a wider and more uniform knowledge of the world's agricultural wealth and possibilities. The last International Statistical Congress, which was held at Budapest in 1876, adopted a number of important resolutions, one of which was that, "each country adopt a

system of agricultural statistics upon uniform lines which will permit of the formation of international statistics."

2. Beginning with a meeting in Vienna in 1873, there have been held ten *International Agricultural Congresses,* at all of which a large number of questions concerning agriculture have been treated, especially from a technical point of view. But some attention was given to agricultural statistics in the resolutions and proceedings of the four Congresses of, Vienna 1873, Paris 1889, Lucerne 1898 and Rome 1903. In the Proceedings of the first Congress in 1873 mention is made of the Necessity of establishing an international *entente,* for the purpose of securing more statistical data in regard to agriculture. Even then it was noted that the entirely different organizations, usages, and methods of the different countries produce meagre statistical results so lacking in uniformity that accurate comparisons are secured with the greatest difficulty or not at all. By establishing an international *entente* it was hoped to procure a greater wealth of agricultural statistical information, and in more useful form for establishing comparisons.

3. The *International Statistical Institute* was founded in 1885 and holds sessions in different countries every two years. Its membership is composed of a limited number of eminent statisticians and economists representing the principal countries of the world, and its reports and proceedings afford a wealth of interesting and valuable suggestions upon a great number of statistical topics. The meetings held at Berne 1895, St. Petersburg 1897, Budapest 1901, and London 1905, considered and discussed a number of important subjects bearing upon statistics of areas, yields, and monthly conditions of agricultural products. These discussions have greatly assisted in emphasizing the importance of agricultural statistics, and have played a signal role in the advancement of statistics in each country during the years following the adoption of resolutions by the Institute.

4. The hopes expressed, in the resolutions of these International Congresses, for the establishment of an international *entente* and the formation of some international agricultural statistical service was destined to be realised in part some

thirty years later by the organization of the *International Institute of Agriculture.*

Much credit for the initiation of a project to secure more complete and uniform scientific and statistical data of agriculture, is due to the earnest and persistent efforts of an American citizen, Mr. David Lubin, of California, who, believing that the farmers and the commercial interests of his country as well as of the whole world would be benefited by a closer coöperation of the farming interests, urged the formation of the International Institute of Agriculture. Several years ago his plan was favorably considered by the King of Italy, who invited the different governments to meet in conference at Rome to consider the formation of such an Institute. The time was ripe for the favorable consideration of such a proposal by the statistical and agricultural authorities of the different countries, and this invitation met with ready response. A conference was held in Rome in 1905, at which all of the principal countries of the world, including the United States, were represented by delegates. That conference agreed upon the text of a Convention, dated June 7, 1905, which outlined the scope and jurisdiction of the proposed Institute. This text was submitted to the governments taking part in the conference for approval, and has been ratified by the following forty-seven countries:

Germany, Argentine, Austria, Hungary, Belgium, Brazil, Bulgaria, Chile, China, Costa Rica, Cuba, Denmark, Ottoman Empire, Egypt, Equador, Spain, United States of America, Ethiopia, France, Tunis, Great Britain and Ireland, Australia, Canada, British India, New Zealand, Mauritius, Greece, Italy, Erythrea and Italian Somaliland, Japan, Luxemburg, Mexico, Montenegro, Nicaragua, Norway, Netherlands, Peru, Persia, Portugal, Roumania, Russia, Salvador, San Marino, Servia, Sweden, Switzerland, Uruguay.

The countries adhering to the Convention of the Institute, together with their colonies, dependencies and protectorates, represent nearly all the world's population, and almost the entire area, production and commerce of agricultural products of the world. In fact, the countries represented in the Institute include an approximate total population of 1,615,574,000

and a total area of 47,169,786 square miles, compared with a population of 38,833,000, and an area of 2,517,038 square miles in the countries as yet unrepresented in the Institute. Thus, the countries included in the Statistical Service of the Institute embrace nearly 98 per cent. of the population, and 95 per cent. of the area of the world.

It is provided in Article 10 of the Convention that, " Colonies may, at the request of the countries to which they belong, be admitted to form part of the Institute on the same conditions as the independent countries." It will be noted that under this provision a number of colonies, dependencies, etc., are included as separate countries in the list of countries adhering to the Institute. The Institute plans and hopes to secure through the governments of adhering countries, agricultural statistics and information for colonies and protectorates which have not individually adhered to the Convention of the Institute.

On account of the different dates and seasons of sowing and harvesting agricultural products in the various parts of the world, the countries have been grouped by the Institute in geographical zones: North, Central, and South, in order to facilitate the collection and dissemination of agricultural statistics.

The Institute is housed in a new and modernly equipped building at Rome of sufficient size for the accommodation of several hundred officials and clerks. This building was constructed for the purpose and donated to the Institute by the King of Italy. The running expenses of the Institute are met from an annual fund of about $200,000 secured by a yearly quota paid by each of the adhering countries, and an endowment by the King of Italy.

The organization of the International Institute of Agriculture is composed of a General Assembly, a Permanent Committee, and the Administrative Staff of the Institute. The General Assembly — a kind of International Agricultural Parliament — meets at stated intervals, on dates fixed by the last General Assembly, for the purpose of examining and approving or disapproving the actions of the Permanent Committee and the conduct of the Institute in general. It is composed of

delegates from the adhering nations; each nation being entitled to a fixed number of votes, which is determined by the group in which the nation has elected to be placed and the amount contributed annually for the support of the Institute. The Permanent Committee is composed of one delegate located in Rome from each adhering country; and practically forms a board of governors for the purpose of supervising the actual work of the Institute. This Committee is resolved into three Sub-Commissions each of which has charge of a distinct branch of the work of the Institute.

According to Article 9*, paragraphs *a* and *b*, of the Convention of the Institute, one of the principal objects of theInstitute is to collect, compile, coördinate, and unify all *official* statistical information relating to agricultural products, and to encourage the collection of such information by the countries which do not now have a regular statistical service for this work so that properly compiled information in regard to the areas, conditions, and production of agricultural products can be disseminated to parties interested throughout the world. By means of its statistical service, the Institute plans to present agricultural statistics furnished by the official statistical ser-

***Article 9:—The Institute, confining its operations within an international sphere, shall:*

(a) Collect, study and publish as promptly as possible statistical, technical or economic information concerning farming, both vegetable and animal products, the commerce in agricultural products, and the prices prevailing in the various markets;

(b) Communicate to parties interested, also as promptly as possible, all the information just referred to;

(c) Indicate the wages paid for farm work;

(d) Make known the new diseases of vegetables which may appear in any part of the world, showing the territories infected, the progress of the diseases, and if possible, the remedies which are effective in combating them;

(e) Study questions concerning agricultural coöperation, insurance and credit in all their aspects, collect and publish information which might be useful in the various countries in the organization of works connected with agricultural coöperation, insurance and credit;

(f) Submit to the approval of the Governments, if there is occasion for it, measures for the protection of the common interests of farmers and for the improvement of their condition, after having utilized all the necessary sources of information; such as the wishes expressed by international or other agricultural congresses or congresses of sciences applied to agriculture, agricultural societies, academies, learned bodies, etc.

All questions concerning the economic interests, the legislation and the administration of a particular nation shall be excluded from the consideration of the Institute.

vices of the different countries, and thereby to publish more complete and reliable information as to the growing crops than is now available to the world; with the hope of securing closer correspondence between the prices of agricultural products and the real conditions of supplies.

This service, however, does not comprise the entire scope of the Institute, whose jurisdiction embraces a large number of other objects of large value and interest, all of which are embodied in the Convention of the Institute above referred to. But it is the purpose of this paper to outline only the scope of the Service of Agricultural Statistics of the Institute.

Many difficulties confront the statistician in drawing up a plan for the International Crop Reporting Service; a system of measuring the conditions of crops; and a service, in a way, supplimentary to the system which each country follows.

In the first place, it is provided under Article 2 of the Convention that the Institute is to be a government or state Institution, and in Article 20 of the " Rules and Regulations " governing the Institute, that the documents and statistical information required by the Institute are to be supplied directly by the different Governments adhering to the Convention, or under their responsibility, or through their intervention. Therefore, the Statistical Service of the Institute, in collecting and preparing statistics of agricultural products, is limited absolutely to information furnished directly by the Governments of the adhering countries, or by their regular statistical services, or under the responsibility and intervention of the several countries.

Also, wide diversities exist at the present time between the data furnished by the different countries, owing to differences in definitions and methods of expressing the information, differences in periods of time to which the data relate, and the different dates of publication. The statistics of different countries covering the same subject matter are now often meagre and incomplete. Thus, the preparation of comparative statements of international statistics of agricultural areas, conditions and productions is rendered very difficult and sometimes impossible.

For example, only a small number of countries have here-

tofore prepared and published reports with the object of showing the monthly condition and progress of the growing crops; and they are not comparable. The United States and Canada indicate the "condition" of their growing crops in terms of a percentage of a "normal" crop, and a "standard" crop respectively. Hungary indicates monthly the total estimated yield for its cereals in absolute figures. Great Britain expresses the "condition" of her crops in terms of a percentage of the "average" yield. Other countries express their condition reports by figures, but these are only conventional symbols qualifying the condition of the crops. Thus Germany and Austria use the following scale, 1, meaning "very good"; 2, "good"; 3, "average"; 4, "poor"; 5, "very poor." Bulgaria uses a scale of points ranging from 6 to 1. France uses a different scale in which 100 means "very good"; 80, "good"; 60, "fair"; 50, "passable"; 30, "mediocre"; 20, "bad." Sweden employs the same scale as Germany, but inversely applied: 1, "very poor"; 2, "poor"; 3, "average"; 4, "good"; 5, "very good." Other countries make use of qualifying adjectives. Thus Argentina expresses conditions by the words "very good," "good," "regular," "bad." Austria uses the words "very good," "good," "mediocre," "poor." Mexico, the words "good," "regular," "bad"; and Holland, the words "excellent," "very good," "good," "pretty good," "average," "pretty bad," "bad," "very bad." There are other countries which make use of no technical terms, but report the condition of their crops by describing the meteorological conditions and the appearance of the fields.

Another difficulty is that the condition reports have been published by the different countries at divergent and even at undetermined dates. The United States and Germany publish them every month from April to December; Austria once a month from April to October; France, Belgium and Mexico once every month; Great Britain on the 15th of July, 15th of August, and 15th of September; Ireland and Sweden in June, July, September and October; Canada once a month from May to December; Hungary twice a month from April to October, and once a month from November to

March; Holland in April, June, July and September; Russia once a month from April until August. Thus while an information service already exists in many countries, the systems employed differ one from another, although they all have the same important aim in view, *i.e.*, to follow step by step the development of the growing crops.

Notable divergences also exist between the statistical statements published by the different countries in regard to harvest results or yields. In studying the question of these statistics we must distinguish between countries which publish forecasts of harvest yield whilst the harvest is being reaped, and before publishing their final returns, and countries which only publish a final statement when the harvest is over.

To the first category belong: Argentina, which publishes toward the close of the year a forecast of the harvest [*pronostico de la cosecha*]; the United States and Canada, which publish preliminary returns of harvest yields progressively during the period of harvesting, and follow the period of harvest with final statements in December of each year; France, which publishes, in August and September, preliminary data on the harvest yield of winter and spring cereals; Japan, which publishes in June the approximate results of its cereal harvest; Russia, which publishes in the middle of August a forecast of the cereal yield; Switzerland, where the *Sécrétariat Suisse des Paysans* publishes a statistical forecast just before the harvest for cereals and before the vintage for grapes; Italy, which, in accordance with its new agricultural statistical organisation, will publish shortly before the harvest of its principal products a forecast of the amount produced; and Hungary, which publishes a forecast of the probable harvest yield expressed in absolute figures. On the other hand, Germany, Austria, Belgium, Chile, Denmark, Great Britain, Ireland, Luxemburg, Mexico, Norway, Holland, Roumania and Sweden only publish returns of harvest yields when the crops are already harvested. It should be noted that Denmark and Sweden publish preliminary statistics, but in the case of Denmark the quality of the yield only is indicated, in accordance with a conventional formula, and in Sweden the preliminary statistics are drawn up at the end of the harvest and

published toward the end of the year. As to cereals, it should be remarked that important differences occur between the dates of publication of the statistical returns, whether preliminary or final, in the different countries. Argentina publishes toward the end of the year, *i.e.*, immediately after the harvest; Great Britain publishes in November; Germany and Austria in December; Ireland and Norway toward the end of the year; whilst Belgium, Denmark, Holland, Roumania and Sweden only publish the results of their harvests in the following year. Roumania publishes in the beginning of the year, Denmark in May, and Sweden at the close of the year following the one to which the harvest data relate.

This brief résumé shows that almost all countries publish final statements of their harvest yields, but that their publication is generally long delayed, often until the year following that of the harvest to which they relate. A few countries also make preliminary statements of harvest yields, published relatively soon after the harvest. The number of countries which publish official estimates of the probable harvest yield is very limited, but such information is sometimes indirectly supplied in the condition reports, especially when they are expressed as percentages of a normal crop, as in the case of the system in vogue in the United States. The agricultural statistics of each country have heretofore been selected and compiled to suit local circumstances. But administrative and political divisions as well as conditions generally differ in the several countries to such an extent that uniformity in these statistics has been impossible. The uniformity existing has been local, where some governments have long established services of agricultural statistics producing comparative data in certain form and available for a series of years. In order to make the general situation clear, the Institute has collected from the different adhering countries a large amount of information bearing upon the organization of their statistical services and the methods used in conducting them. The data have been presented in a comparative bulletin, published under the title " The Organization of Services of Agricultural Statistics in Different Countries." The bulletin shows how such services are successfully organized and operated in many

countries, and is useful to other countries contemplating the organization of similar statistical services, or considering changes in services already organized for the purpose of providing the Institute with the statistical data it requires. The data given in the Bulletin furnish many items of interest to the student of international statistics.

It is one of the primary objects of the International Institute of Agriculture to secure greater uniformity between the agricultural statistical services of the different countries, and thereby a greater comparability between the information officially reported by the several countries and more complete and reliable statements in regard to the conditions and the yields of crops throughout the world than is now available. In order to attain this object it is necessary that some countries modify or adapt their services of agricultural statistics to the statistical plan adopted by the Institute; and that other countries which have no services of agricultural statistics, organize statistical services capable of supplying the Institute with the necessary information. It is within the province and purport of the Institute to use its good offices and influence to bring this about.

Without waiting for the development of greater uniformity in the statistical methods and statements of the different countries, the Institute has decided to proceed to the organization of a Regular Crop-Reporting Service; and a plan for such service was prepared and presented to the second session of the General Assembly of the Institute, held in Rome in December, 1909. As a result, it was decided to begin on January 1, 1910, an International Crop-Reporting Service, and regular monthly reports are now published in the "Bulletin of Agricultural Statistics," an official publication of the International Institute of Agriculture, under the authority of the Permanent Committee, issued regularly on Saturdays, about the 20th of each month. The French language has been adopted for the proceedings of the Institute, and the *official* publication of agricultural statistics is made in the French language in the *Bulletin de Statistique Agricole*; however, in order to communicate the information to all parties interested, the Bulletin has been translated to, and dis-

seminated in the English, German, Italian and Spanish languages.

The decisions in regard to the plan of the Statistical Service, and a brief outline of the Service for 1910-11 follow:

Decisions of the General Assembly.

1. The General Assembly considers it necessary that the Information Service of the Institute commence on January 1, 1910, for the following products: wheat, rye, barley, oats, maize, rice, cotton.

2. The basis of the Regular Information Service should be the agricultural statistics of all the countries adhering to the Convention of 1905. These statistics should comprise as a minimum:

(*a*) Periodical statements of total area, and of divisions into principal categories of products;

(*b*) Annual statement of sowing and planting for the above mentioned products;

(*c*) Statement of the area sown, and the conditions under which sowing took place in the different seasons of the year (rains, drought, frost, etc.);

(*d*) Regular periodical and monthly inquiries should be made at the same time in all countries as to the condition of the products, and communication of the results made to the Institute; inquiries should also be made, and information sent, relating to the same date, for all countries, as to unusual weather conditions, diseases of plants, and invasion of harmful insects, influencing the condition of the products;

(*e*) *Approximate estimate* as to the probable yield, in relative or absolute figures, or in a per cent. of an average harvest, to be made one month before harvest time, and at the same period as the statement as to conditions of the products for the same month;

(*f*) *Preliminary statement* as to the yield of the different products, as soon as possible;

(*g*) *Final statement* as to the yield of the different products; to be made as soon as possible after the harvest, and conforming to the different zones in the countries.

3. The General Assembly requests the Governments to reorganize their services of agricultural statistics, if such services exist, otherwise to adopt such a service as will enable replies to be made to the above mentioned questions for the Information Service of the Institute. The Assembly abstains from proposing any method for the collection of data, or any uniform service, being of opinion that the methods should be chosen by the Governments themselves, according to the particular conditions existing in each country.

The Assembly also considers that the information necessary for the Regular Information Service regarding the condition, development and production of different products should be sent to the Institute on the same date and in similar form by all countries, thus insuring the simultaneous despatch to the Institute, (1) of the original data published by the different Governments; (2) of the results of the transformation of these data into percentages of an *average* harvest of each respective country; (3) of a definite figure expressing the average production per hectare.

The General Assembly recommends that the monthly data be collected for each country on the first of the month, forwarded to the Institute on the 15th, and published by the latter on the 20th.

It is of the greatest importance that the preliminary and final statements of harvests be known by the Institute as soon as possible after the date of collection of the data.

4. The General Assembly states that, without awaiting the future development of agricultural statistics, the Institute's Regular Service of Information should commence its work on January 1, 1910; and the Assembly requests the Governments to reply to the questions of the Institute, and to forward on the above mentioned dates, the necessary information regarding area, condition and the probable and final yields of the different agricultural products; in cases where it is impossible to supply such information, more general statements, of a qualitative nature only, might be forwarded. In the Bulletin published by the Institute, mention should be made of the nature of the information contained therein.

5. The General Assembly also proposes that the Informa-

tion Service of the Institute request information from the Governments regarding the following products: silk, cocoons, sugar, tobacco, coffee, wine, alcohol from wine, olives, olive oil, hay and cattle, and that such information be published as early as possible.

6. Recognizing the necessity of elucidating the question as to the utilization of the statistical statements relating to commerce, stocks, importations, exportations, and products in transport, for the Service of Regular Information, the General Assembly invites the Permanent Committee to commence and complete the necessary studies in order to submit propositions on this subject to the next session of the Assembly.

7. The General Assembly is of opinion that the Institute should extend its work as soon as possible to the production, commerce and consumption of other important vegetable products, and of animal products, and invites the Permanent Committee to commence preparatory studies to this effect.

Outline of the Statistical Service for 1910-1911.

Complying with the Decisions of the General Assembly, the Institute began its service with the crops of 1910, purposing to report upon them progressively, from the time of seeding or planting of cereal crops in the Autumn of 1909; then reporting the "condition" of the growing crops during the months following the period of planting, and, finally, preparing estimates and reports in regard to harvest results.

The following outline shows the different stages to be included in the Crop-Reporting Service for 1910–1911:

I. *Information to be repeated during the month following the completion of seeding.*

(a) Area sown in actual figures, or if such figures cannot be given, in a percentage of the area of the previous year. The replies received in the form of percentages are reduced by the Institute to absolute figures if possible, the actual replies as given by the country being added as footnotes.

(b) Condition under which sowing took place, to be given in words, with notation of any particular phenomena which prevailed during the preparation of the ground, or during the period of seeding.

II. *Information to be reported during the months following the period of planting, and continuing until the month preceding the harvest.* (The word *harvest* to be understood as the time of reaping for cereals, and the time of picking for cotton.)

(c) " Condition " of the growing crops.

Replies to be made in figures showing the condition of growing crops in the form of a percentage; 100 representing an " average " condition which, if uninfluenced by abnormal circumstances, would give a probable yield per hectare (or unit of surface), equal to the average yield of the past ten (10) years.

(d) In the case of a country which already prepares and publishes crop condition reports employing other methods of expression than the " average " just referred to, such country is requested to send the reports to the Institute in figures showing the reduction of the original reports to percentages of an average harvest.

Abnormal weather conditions, diseases of plants, or invasion of harmful insects, seriously influencing the condition of growing crops will be reported in words.

III. *Information to be reported during the months immediately preceding the commencement of harvest.*

(e) *Approximate estimate* of the yield, to be given in actual figures, or in estimated yield per hectare, or in a percentage of an average of the total harvests for the past ten years, or in percentage of the harvest of the preceding year.

The data for the year are to be transformed by the Institute into relative figures for publication, and replies from the countries are to be reproduced in the original form as foot notes.

(f) " Conditions " of the growing crops. (As under " e " or " d ".)

IV. *Information to be reported monthly from the beginning until the completion of harvest.*

(g) Area harvested is to be given in actual figures, or, if this cannot be given, in a per cent. of the area of the previous year.

(h) Correction of the *approximate estimate* mentioned under " e."

V. *Information to be reported during the month following the completion of harvest.*

(i) *Preliminary statement* of the yield, in actual figures; all data received in other form being reduced to actual figures by the Institute if possible.

VI. *Information to be reported during the months following the completion of the threshing of cereals.*

(j) *Final statement,* in actual figures, of the total production.

An effort has been made to organize this international service into a dynamic, potential, practical service; and it is patterned after the system possessed by the Federal Government of the United States, which is probably the oldest and most highly organized system of monthly crop-reporting in existence. The Institute has met with quite a measure of success in starting the service, although the data are necessarily incomplete in the beginning months and years of the service. Notices have been received by the Institute from a number of countries, referring to the action taken by their respective Governments in relation to the Decisions of the General Assembly and the supplying of information to the Statistical Service of the Institute. In accordance with these notices, complete monthly reports are being received regularly from Belgium and Hungary, and also Bulgaria, Canada, Denmark, Sweden, United States, Luxemburg, Japan, Netherlands, Switzerland, Roumania, and Tunis, as to the " conditions " of the crops, expressed in figures in the form of percentages of an "average,"—the system adopted by the Institute. It may be added that these reports as to conditions of crops now being made by a number of countries to the Institute, are innovations; such information has not been published heretofore, but has been prompted by the Institute. The following named countries, which already prepare and publish crop condition reports but use methods of expression differing from the system adopted by the Institute, have *reduced* their own reports to figures representing the percentage of an " average " requested by the Institute, and they are forwarding them regularly in reply to the questionnaires of the Institute:

United States: reduction from regular reports which are issued in the form of percentage of a "normal."

Canada: reduction from regular reports which are issued in the form of a percentage of a "standard."

Bulgaria: reduction from regular reports which are issued in the form of "points": 6 to 1.

Sweden: reduction from regular reports which are issued in the form of "points": 5 to 1.

Luxemburg: reduction from regular reports which are issued in the form of "points": 1 to 5.

New reports have also been received from a number of countries as to area sown to winter crops of 1909–10; and yields of crops or harvest results in the countries south of the equator. These latter may be found in tabular form in the "Bulletins" of the last several months.

In projecting the crop-reporting service the organizers of the Institute have likened the Service to that of a separate country, only in the international service, the governments of the different countries are the suppliers of information — the correspondents. There are, however, other reasons for such an international service than the demands for statistics of crops within the several countries. For the aim of the Institute is to systematize information on agricultural production, and to provide, by means of official statistical data, a reliable and authentic basis for the formation of prices. Under the modern facilities of transportation and communication, the prices of many agricultural products are fixed or influenced at frequent intervals — often daily — at the world's grain and cotton centres by large market organizations. In these centres is collected and assembled official and private information bearing on the probable yields and conditions, supplies and stocks available, amounts on the routes of commercial movement, and on demands for the products; in fact, all news tending to influence the prices. In many instances the data are gathered by private and commercial agencies in a practical, honest and effective manner, and are of value to the agricultural and commercial interests. On the other hand, some reports of prospective yields and the conditions of the growing crops are inconsistent, incomplete and inaccurate, and pub-

lished in an exaggerated form which tends to influence opinions of the true conditions — and also naturally, the prices. Also agencies are located at the world's market centers which may circulate false reports, and combine to raise or lower prices artificially and temporarily; by manipulating prices they frequently instigate unhealthy speculation and violent fluctuations in the prices of agricultural products.

One of the purposes in forming the International Institute of Agriculture was to secure a surer and more reliable world-wide service of information in regard to the products of agriculture, which may serve as a check upon the evils of inaccurate and misleading reports. This check, in order to be effective, must be based on the service of the Institute, and founded on official statistics collected by government organizations and furnished to the Institute by the different countries themselves. The official statistical investigations can be made to cover all parts of each country and of the world, and to yield much more complete, accurate and reliable information than is otherwise obtainable.

But the data furnished must be as complete, accurate, prompt, and comparable as possible; and to this end the Institute seeks to secure greater coöperation between the countries. A number of countries adhering to the Institute have taken steps towards adapting their individual statistical services to the uniform plan of service adopted by the Institute for its International Service. As a result of the greater uniformity secured in some countries, and the perfecting of services of agricultural statistics in other countries, the whole world will have what some countries with well organized statistical services now give for their own territory.

Briefly stated, the present plan of the initiative service contemplates collecting, coördinating and publishing monthly reports or bulletins in regard to crops throughout the world, grouping the data for all countries in comparative statements so far as possible. It is the purpose of the Institute to undertake each year the collection and prompt publication of information relating to the area seeded or planted and the conditions under which planting took place; then to report regularly the " Conditions " of the growing crops during the

months following the period of planting, and finally, to prepare preliminary and definite statements in regard to harvest results or productions. It is planned to assemble and present the data in every instance in uniform and comparable statements, and with totals, in order that the reports of the Institute may gradually assume an inherent value for comparative purposes when a series of reports become available.

In general, the Statistical Service of the Institute consists in the collection, coördination and dissemination of statistical information, concerning agricultural products of the world, confining its efforts to securing *official* data from all countries, harmonizing differences, and reducing the results to comparative bases, so that the information may be presented in a manner which will be of value to the agricultural interests of the world.

Statistical information which covers only parts of the area devoted to a crop of world-wide cultivation and distribution may be misleading, and the producers and others interested need knowledge of the entire crop expressed as totals or quantitative statements. Such definite forms of statistics have the advantage of being easily interpreted by all concerned, and are capable of comparison from month to month or from year to year. Moreover, they provide the agricultural and commercial world with the only means of ascertaining the factors by which the equilibrium is established between the countries producing an excess of a certain product, and those requiring additional supplies to make good a deficit of the same product; and of ascertaining the true facts which tend to assist the markets to resolve the balances between supply and demand into fair current prices.

The International Institute of Agriculture, with its International Assembly or Parliament meeting every couple of years, its International Permanent Committee or Board representing 47 different countries meeting each month, and its international staff of experts and clerks working side by side each day, is unique, and one of the most advanced experiments in international coöperation which has ever been made among the family of nations.

RAILWAY STATISTICS.

By Lewis H. Haney, *Professor Railway Economics, University of Texas.*

A.

Analysis of Public Railway Statistics and Criticism of Such Statistics in the United States.

The following paper deals with the problem involved in getting and presenting to the public statistics of railways that will be intelligible and useful. Attention will be confined to steam roads or trunk lines, such new problems as are involved in the reports of express companies, pipe lines, water carriers, and the Pullman Company being untouched.

I. *The Grounds for Public Railway Statistics and the Bases for Statistical Units.*

The first approximation to a classification of the grounds for public statistics of railways would comprise the following subjects, all being matters in which it is now generally admitted that society through the government has a legitimate interest. (1) The adequacy of transportation. This resolves itself into two chief questions: (*a*) the adequacy of facilities such as track, equipment, and personnel; (*b*) the partly resulting adequacy of service, depending upon conveniences, speed, frequency, etc. (2) Closely connected with the general question of adequacy is that of safety of life and property. (3) The value of the transportation service, or the rate question, furnishes an important ground for statistics. Indeed the first points are in a sense subordinate to this and find expression in it; but the considerable extent to which rates depend upon adequacy of transportation should be emphasized: the railway machine is fundamental. (4) The value of the railway property, tangible and "intangible," forms a distinct but interrelated question, rates and taxation both being involved.

(5) Then there is the problem of sound finance, upon which certain statistics have a direct bearing,— a problem closely entwined with the preceding points. (6) And finally that part of the labor problem which lies in the field of transportation has a separate interest. The subjects of wages, hours, and condition of employment of railway labor have peculiar importance. This statement of the case is empirical and hardly analytical enough to be of the deepest value.

It is of some importance, in a more careful analysis of railway activities, to make the distinction between cost and service. For the public is primarily interested from the latter point of view; while in the case of the railway the private view point,— according to which the cost, or what may be called the net-revenue viewpoint, is the important thing,— is the one taken.

But service is not a simple matter. Accordingly it must be broken up into its elements to get at the bases for an adequate statistical statement. The various ideas embraced may be represented thus:

I. Service
- 1. Quantity
  - weight
  - capacity
- 2. Utility
  - Speed
  - Punctuality
  - Frequency
  - Direction
  - Convenience
  - Safety (Pass.)
  - Commodity

  } Rate
- 3. Cost (including loss and damage perhaps.)

} Unit of transportation-product.

Similarly the cost viewpoint must be analyzed:

II. Cost, or net revenue
- 1. Operation (gross)
  - "Performance"
  - Expenditure
- 2. Traffic (net)
  - Revenue operations, or net or paying performance
  - Income (especially net income)

} Units of expenditure and income.

Finally there is the point of view of faculty—of "ability to pay" to society in the shape of taxes.

III. Faculty
- 1. Physical value
  - Way (including bridges, tunnels, etc.)
  - Structures
  - Equipment
  - Franchise
- 2. Non-physical, or "intangible" value
  - Differential advantage of location:
    - Negative (costs)
    - Positive (earnings)

} Unit of value.

As the reader may not have studied this phase of railway economics, a word of comment upon the above classification may not be amiss. As to the first or service viewpoint, it is obvious that the quantity of transportation product may be measured in either units of space or of weight. The car-mile unit is primarily one of space capacity, and only as goods are assumed to have like specific gravity does it serve as an index of weight service. This distinction as yet has its chief significance in the mail and passenger services.

It is evident that the utility of service, quantity remaining the same, varies according to speed, and certain branches of the freight service are differentiated on this basis. We have no statistics of the punctuality * and frequency of service, and but scanty ones concerning such elements as direction and commodity. To point to the significance of but two of these elements, take frequency and commodity. It is of considerable importance to know not only how many trains are run, but also how many are run in a given period of time, say 24 hours; and comparisons might be quite inadequate without information on this point. Above all, however, it is essential to know something of the proportions in which the various commodities enter into the transportation product. The *utility* of the service varies considerably as between sand and sugar or hay and packing-house products.

It will be observed that the rate is determined by the forces operating through utility and cost, and that the various factors in judging the utility of service are essential to judging the justice of the rate of compensation for service is apparent.

Then, at the end of the analysis of service, we must further observe that our unit of statistical judgment must be one which corresponds to service. If the transportation product which the railway furnishes society, and which is bought by the shipper, is the utility of moving so many pounds or tons from A to B, the ton-mile, not the car- or train-mile, must be the logical unit.

But meanwhile what of the cost viewpoint? In the first place the relation between the service and the cost view-

* The New York Public Service Commission compiles reports of number and percentage of trains on time and the average time late.

points — the absence of an absolute barrier between public and private statistics — is to be mentioned. That locomotive performance, to be concrete, must vary with speed and direction; that frequency and convenience depend upon expenditure; that the cost to the shipper and the income of the carrier are related,—all these things are apparent. As long as private ownership and operation exist there is a distinction. But to the extent that the government undertakes administrative control or seeks to enlighten the public on more fundamental points, to that extent, of course, the private aspect of the railway property is limited, or is "affected with a public interest." This is but another way of saying that the cost, or net-revenue viewpoint, is added to that of mere service. Here lies the connection between statistics and the rate problem.

The distinction between operating and traffic statistics is one which, as such, is of small importance for the public. But in a general way it is important to keep statistics of net and gross load separate. In a sense, the "tare" weight is waste transportation, and society is justly interested in reducing the proportion of "dead" weight. It is the tendency with railways in this country to further develop traffic statistics, and it would be well if our public statistics were to profit by this development. This is notably true in the case of commodity statistics.

As in the case of service statistics we conclude by indicating that the logical statistical unit of judgment must be one which will vary with costs. To discuss such a unit in all its details would take us over into the field of purely private interest. But to the extent that this field is affected with a public interest, it is essential that our unit have a direct and logical connection with costs. As will be seen the train-mile must be criticised on this score.

II. *Criticism of the Present Situation.*

In what follows the position of looking for defects is frankly adopted, the various merits of the present statistics being taken for granted. To pass at once to an application of the above analysis, regarded as a statement of some of the essen-

tials to complete statistics, the most obvious point to be made is deficiency of data on certain of these essentials.

1. *Omissions.* To the writer the capital omission seems to lie in the field of adequacy of facilities as limiting the quantity and the utility of the service, on the one hand, and increasing costs on the other. As will appear below, too, a most important factor in making statistics comparable is lacking here. One of the subjects on which special emphasis should be laid is the physical condition of the road proper,—the rail-way. As Mr. Byers in his *Economics of Railway Operation* says (p. 625) : "The question of operation with inadequate facilities is therefore one worthy of careful consideration, even from the standpoint of net earnings alone." The width of roadbed in part determines its bearing capacity ; upon the character and depth of ballast depend much of the stability of the track and the distribution of the weight of trains over adequate bearing surface, and the same may be said of the number and size of ties. If the rail is light it bends or waves, especially at joints, thus decreasing the load that an engine can haul. And the weight of rail varies from 50 lbs. to 100 lbs. per yard; the number of ties from 14 to 18 or more per rail (30 ft.); the depth of ballast under tie from 0 to 12 in. or more; and the width of roadbed from 12 ft. to 20 ft. These things affect engine performance, train-load, maintenance expenses, etc., directly and seriously. Also to make our train-, car-, engine-, and ton-mile units comparable we must know the conditions of this kind under which they were produced.

Then there are the matters of profile and allignment. That grades and curves affect directly and considerably both operation and maintenance, entering into the determination of net earnings and capital values, scarcely need be stated. The following data, to be found in the reports of European governments,—chiefly in Germany and Austria—are suggestive of our deficiencies on this score:

Railway Mileage:

Average mileage for the year.
Per cent. of double track.
Miles used for { passenger service. / freight service.
Miles in operation, under construction, to be constructed.

Physical Conditions.

Substructure:

Miles of embankment.
Depth or height of cuts and fills.
Width of road bed (at base of rail).
Kind of ballast.
Cubic yards of ballast.
Grades and curves { number. / per cent. or radius.
Subways and culverts.
Tunnels { number. / total length. / clearance. / number of tracks.
Bridges and viaducts { number of tracks. / clearance groups. / total length.
Crossings, railroad, road, grade or not, kind of protection.
Junctions.

Superstructure:

Ties and Sleepers { material. / number per mile. / treated or not. / price.
Rail { total weight. / weight per yard or mile.
Switches.
Telegraphs.
Signals, number of different kinds of signals, alarms, etc.
Buildings, number { stations, waiting rooms, administration buildings, shops, sheds, warehouses, water stations, coal chutes, treating plants, etc.
Turntables, moving platforms, loading devices.

Nor are these the only factors limiting train service. The length and frequency of passing tracks, in single track lines, is highly important; and, in a similar way, the frequency and capacity of water and coaling stations.

Other notable omissions are: statistics of condition of equipment; of speed, frequency, and punctuality of service (passenger); of commodities and kinds of traffic; of gross ton-miles; of locomotive-miles; of quantities and prices of materials consumed by railways; and of value of plant. Space is lacking for a discussion of all these deficiencies, nor are they of equal moment. Passing now to the matter of condition of equipment—where such data as *average* number, availability, number of seats, weight, etc., are missing, the following data, taken from statistical reports of European governments, will illustrate some shortcomings:

I. *Motors:*

Kind { Tank locomotives, motor cars, electric locomotives and snow plows included. / Standard or narrow gauge.

- Number
  - *Average* number.
  - Number per 1,000 car-miles.
  - Number of coupled axes.
- Availability
  - Number placed in service each year.
  - Average locomotives in shop
    - Locomotive months.
    - Per cent. available.

II. *Cars:*

1. Freight
   - weight.
   - gauge.
2. Passenger
   - weight
     - total
     - average per seat.
   - guage.
   - heating.
   - number of seats
     - per car, by classes.
     - per mile track.
   - Cost
     - total.
     - per car;
     - per mile track.

Omitting from the present discussion the points bearing on character of service, which chiefly relate to passenger operations, we come to commodity and similar traffic questions. The Interstate Commerce Commission publishes a table on freight traffic movement which shows the *tonnage* of certain products of agriculture, animals, forests, and manufactures,* and further information is secured from the carriers but not published. But we should like to have the ton-miles, and, furthermore, should like to have these commodity ton-miles brought into relation with the revenue they yield. Nor is this mere academic curiosity. When a concrete problem in rates comes up the traffic manager must have such information; and the character of the argument in the Texas Cattle Raiser's Case is evidence of the importance of such information to the work of the Commission. It is virtually impossible to *compare* rates without an analysis of commodity movement and revenue. Also we feel the need of more information concerning quantity, utility, and perhaps cost, in the different classes of freight service; and more analysis of length of haul. To merely divide tonnage into the two groups, "originating on road" and "received from connecting roads," as does the Interstate Commerce Commission, leaves the question as to what tonnage and revenue are "local," what interline, or "through," without an answer. European statistics make information on the following points available, thus suggesting certain possible shortcomings in our figures, as the latter do not contain such information:

*Statistics of Railways in the United States, 1907, p. 84.

Belgium: Movement of certain great classes of goods.

1. From and to various countries:
   Local / Maritime { arriving; / departing. } { long list—acids, asphalt, zinc, etc.
2. Interior.
3. International:
   Germany, Austria, etc. (Chemicals, beer, lumber, etc.)

Italy: Tonage and income of principal commodities.

1. Importance: { Tons / Income
2. Quantity: { Fast / Slow } grain, asphalt, etc.
3. Income: { Fast / Slow

France:

Ton-miles { coal, coke, etc. / vehicles. / livestock.

Tons { grain; wine, vinegar, spirits; groceries and foodstuffs; cast iron, iron work, metals; raw materials (?) and manufactures; construction (building) materials; fertilizers; coal, coke and mineral fuel; miscellaneous merchandise; vehicles, horses, livestock (goods by piece and head).

Our passenger statistics are similarly inadequate, no analysis by classes being made. This will become more and more important as the volume of passenger traffic increases. Some typical units, taken from European reports, will serve to show what is possible in this line.

Passenger:

Number of passengers { per seat. / per mile track.

Number of passengers by price of ticket.

Total passenger income per car-mile.

Income per passenger by classes.

Income from first class, including special, excluding mileage.

Receipts from { Baggage. / Dogs. / Military and naval. / Special trains. / Milk on passenger trains.

Receipts from different classes of tickets:

Round trip / Sunday / Laborers / Excursion / Mileage, etc. { total; per cent. / per passenger. / per passenger mile.

Lying more immediately in the field of operating statistics and the cost viewpoint, are the gross-tonnage and the locomotive-mile deficiencies. The former would be useful, as already indicated, in judging efficiency. The latter is needed to serve as a check upon the train-mile; for, as will appear shortly, the train may embrace varying numbers of locomotives, and furthermore light engine-mileage is an element in judging efficiency, absolute or relative.

Current discussions concerning the railways' "cost of living," etc., show the need of reliable price figures covering the most important materials used by railways, as well as wages. Such information is given in part by several foreign governments.

The value of plant is a more important question. Here foreign statistics indicate a backwardness on our part, though the different relations which exist between government and railways in part explain this fact. As the tide sets toward physical valuation and as such matters as depreciation accounts are used and made public, such statistics will become more necessary.* We now have the amount of operating expenses devoted to maintenance of way and structures, and to repairs and renewals of rails, ties, and equipment, and permanent improvements charged to income account; but nothing is shown concerning the extent or character of renewals, a matter of vital importance where a record of value of plant is concerned.

The following data are to be found in European reports:

Financial Statistics:
Capital:
I. Cost of buildings and plant.
Land and payment for use of land
Fences
Crossings
Bridges
Tunnels
Permanent way
Stations
Shops
Rolling stock, etc.
} Total, and per cent. per mile.
Expenditure connected with cost of buildings and plant.
Operating expense from building funds.
Interest during construction.
Loss through change in valuation.
Reserve and similar funds for amortization.
Other.
Deductions.
Surplus from operation on building fund account.
Repayments not covered above.
Changes in valuation.
Expenditure from income and from funds set aside for amortization.
Subventions, etc.
Interest.
II. Capital realized from securities.
Authorized { Stock. Bonds.

*See report of statistician in *Statistics of Railways in the United States*, 1907, pp. 147-8.

Issued { Stock. / Bonds.
Amount realized.
Remaining to be issued.
Retired.
Interest and dividend claims.
Guarantees { net income. / return on securities.
Subventions, etc.

2. *Illogical Units.* One of the most fascinating and important parts of the statistician's work is the development of the best units or bases of statistical judgment. On this side our published railway statistics compare favorably with any, but none seem above criticism. The principle of coherence is so commonly violated. To be true and logical the unit must be one based on a cause-and-effect relationship, that is, it must vary with the phenomena of whose summation it is an index, or must indicate the relation between worker and work done.

To illustrate this in a negative way take the much overworked train-mile. If it is to be our unit of service, simply as an index of utility rendered, it need only have the quality of varying in proportion to utility consumed by us. Or if it is to have a deeper significance, entering the rate question through the door of cost, it must meet the test of varying with costs, —of indicating the relation between tractive power (the worker) and tonnage movement (the work done). What is the result?

As to service one first reflects that the train is so lacking in homogeneity that the miles it makes are sadly lacking in uniform value. By the time one has asked how many cars there were in that train? what kind of cars—gondolas, box, tank, or stock? at what rate of speed did it move? was it going in the direction of prevailing traffic? was it a train of twenty years ago, made up of 30-ton wooden cars and drawn by a little "American-type" locomotive, or one of today with 50-ton steel cars and a Mallet locomotive?—by this time one finds that one train-mile is so different from another that he hesitates to accept it as a standard. Anyhow, he reflects, what one wants from the railway is not train-miles but tons (of goods) moved from A to B,—ton-miles, for short. And while, to be sure, there will be on the average

some relation between trains and tons moved, it is not necessary or close enough.

This unit, however, is more often used as a cost index (see I. C. C. Statistics, 1907, pp. 396—498). But, passing over the difficulties of defining a train, it may be said that trains consist of one or more locomotives and a number of cars. In this compound aggregate some costs vary with the number and type of locomotives (wages of engine crew and say 30 per cent. of fuel), having no connection with the number of cars, or the "train." Others are peculiar to the cars. Finally there is a remainder that belongs to the train as such (balance of fuel, wages of train crew, etc.). Obviously the train-mile will serve as a homogeneous unit of cost only to the extent that the factors peculiar to locomotive expense and car expense are either negligible or capable of being averaged. Locomotive expenses are far from being negligible. Therefore the value of the train-mile unit partly depends upon an assumed average cost of locomotive-miles, having its weakness. As a unit of cost, perhaps the chief difficulty comes in the varying number and kind of locomotives embraced in the train. Then there are the varying "train resistances," depending on speed, number of cars, grades and curves, etc.

The theoretical lack of relation between train-miles and expense or performance is illustrated by the following relative figures:

Year.	Train-miles.	Average Cost per Train-mile.	Operating Expenses.	Ton-miles.
1897	100	100	100	100
1902	117	127	148	165
1907	146	158	232	242

To the writer it seems that the usefulness of the train-mile unit varies somewhat accordingly as it is applied to the passenger or the freight service,—suggesting, by the way, that the differences between freight and passenger service can not be removed through this agency. Considerations other than cost play so great a part in passenger operation that, from the

last viewpoint, it has small importance; while in the freight service, if sufficient interpretative data concerning locomotive miles, gross and net tons per train, etc. are utilized, it may be of considerable service. From the service viewpoint the situation is reversed, for in the passenger service train-miles seem to approach more nearly a necessary relation to social service than in the freight service.* Considered as an independent unit the locomotive-mile is open to similar objections.

But without further elaboration the conclusion may be drawn that per-mile units have been too largely depended upon in our railway statistics. Phenomena which do not have a reasonably close relation to miles should not be measured in miles. We need more careful analysis of essential relations and variety of units each adapted to the particular case. A similar weakness might be illustrated from our accident statistics, where the *occasion* is made to serve as a *cause* in some columns.

Take the case of locomotive-miles. As a matter of fact locomotive-hours would mean more; for, taking all expenses connected with locomotive operation into consideration, it will be found that cost varies more with time than distance,—interest, certain repairs, fuel, etc. But hours alone can not measure locomotive performance: there must be some relation with product. What is produced is "draw-bar pull," or tractive power, so that to really judge efficiency of locomotives from either the cost or the service viewpoint a unit of tractive power must be used. Accordingly a recent report of the Committee on Conducting Freight Transportation of the Association of Transportation and Car Accounting Officers recommends the tractive-power-hour for use by the railways. Thus allowance would be made for different tractive powers, delays between terminals, etc.

Perhaps the true meaning of these different units appears most clearly when the railway is imagined as a great organism whose work is performed through a series of concomitant but subordinate activities. Each department has its function and

*As an index of service between particular points passenger train-miles may be of little value, as they would include trains which did not stop at one or both the points, perhaps, etc.

its product, but that product may be the raw material for another department which carries the work a step farther,—perhaps to its consummation in the final transportation product. Thus in this hierarchy various units may be appropriate for various departments according to their contributions. If it is the function of the terminal force to move cars, "cars handled" is the appropriate unit—of cost, at least. Obviously the ton-mile is not a unit applicable to the work of the mechanical department; that department directly furnishes tractive power on the one hand and carrying capacity—cars, trains—on the other. And so on. The ton-mile caps the climax. But when one desires to judge the particular and peculiar efficiency of a subordinate part of the mechanism its peculiar work must determine its unit. Just as in the case of the cost viewpoint some question might be raised as to how far our government should go, so here it would be necessary to ask how intensive a regulation is desired to determine how many subordinate units are necessary.

Not only is the per-mile average overworked, but also the simple arithmetic average is so used as to be a very relic of barbarism. It is hardly necessary to point out its limitations. As to the particular point now involved it fails in not indicating the weight and distribution of the factors averaged. Why, then, not make some practical use of such wellknown statistical devices as the weighted average, the mode, and the median? No average wage for all employes is given; a weighted average would be good. The mode would be best for the average trip and haul. Several shortcomings in the most used units of railway statistics might be capable of partial remedy by the adoption of more illuminating averages, if only the returns were made more analytically.

3. *Incomparability: lack of interpretative data.* A very unfortunate result of the above shortcomings in our statistics, and especially the omissions, is their lack of comparability, and on the need for greater comparability great emphasis should be laid. Most railway men will hold that it is impossible—or at least impracticable—to make truthful statistical comparisons of the operation of one division with another, of one railway with another, or the railways of one

country with those of another. The difficulty is certainly great, and in some cases doubtless insuperable. So numerous are the factors entering into operating conditions and the determination of rates, for example, that it would be extremely difficult to bring one set of conditions into contrast with another set and strike a balance. The various conditions can, with more or less difficulty, be ascertained and listed, but so complicated does the comparison then become that a comprehensive conclusion may not be possible, especially for the general reader. In spite of this fact, however, it is believed that at several points important steps may be taken toward making comparative statistics more illuminating. Much of the criticism of all statistics is due to the fact that they are lacking in comprehensiveness. Interpretative data should be brought into connection with them. In short, what is frequently needed is not the waste basket but *more* statistics,—to be used as memoranda.

Take, for example, the statistics of maintenance of way and structures expenditures. Here is a road which annually expends an average of 19 per cent. of its gross receipts for maintenance; there is another which expends an average of 30 per cent. One of the most important factors entering into the determination of the average difference is the character of the road bed, which may be fairly indicated by easily available statistics. Grades, curves, bridges, ballast, weight of rail, etc., should be known in order to judge as to the adequacy of expenditure for maintenance.

How adequate is the service rendered by one group of railways as compared with some other group? In one case there are no statistics as to frequency and speed of trains. Obviously an important factor must be omitted in any comparison.

Units expressing train load and train-mile density are important, but comparisons are relatively meaningless without the coordination of data as to character of road bed, frequency, and length of passing tracks, etc., all of which limit size and movement of trains.

The question of comparative rates is continually mooted, and in spite of the fact that exact and absolute comparisons

are at present impossible, it would be a valuable step in advance if comparative statistics of real market value of listed securities, of physical characteristics of road and equipment, of proportions of local and through traffic, and more information concerning commodities, etc., were compiled. On this and the preceding paragraph what was said above concerning statistics of physical condition applies.

In this relation, and also bearing on the preceding points, the lack of separation of statistics of main and branch lines might be suggested as an important limitation upon comparability. Branch line traffic and branch line standards vary widely from those obtaining on main line, and the importance of keeping statistics of the two distinct is emphasized by the fact that several important roads do so, while most roads have the data easily available.

It would seem that the publication of such data in connection with statistics of receipts per ton per mile would serve to educate the public and keep to the front some realization of the intricacy of the problem, while enabling a rough and general appreciation of the factors which cause and warrant variations in ton- and passenger-mile earnings.

It is probably impossible at the present time to base rates entirely upon cost, and even a partial adoption of the cost basis must be more or less roughly approximate. Yet much remains to be accomplished in the way of cost accounting, and in any case the fairest way to approach this question is to first make available all pertinent information. It has been the writer's observation that practical railway men are more and more working toward an approximation of specific costs.

It is a common objection made by the carriers to furnishing statistical information that the data are only approximate and valuable to the railway for comparative purposes alone. It should be remembered that it is for just such purposes that government statistics possess their value. Careful approximations *made on the same basis* may be of the highest value, and it is for comparative purposes largely that statistics are compiled.*

*Certainly it would be well to add notes warning the reader at points of the merely approximate character of the data.

B.

Some Suggestions for the Improvement of Our Public Railway Statistics.

In the first part of this paper the writer has essayed to lay the basis for an intelligent criticism of our public railway statistics. In what follows an attempt will be made to follow up the deficiencies above pointed out and to make certain concrete suggestions looking toward the improvement of such statistics. Accordingly, certain desirable additions to the information now available will first be indicated; then certain re-adjustments or new correlations, the use of more logical units of judgment, and aids to clear, forceful presentation will be suggested. Just as in the first part of this paper various units used in foreign reports were referred to as suggesting shortcomings, so in what follows reference will be made to data kept by American roads—but unused by the government as suggesting remedies.

The writer feels that he lacks the wisdom required to enable him to decide just what improvements are practicable when all their advantages are weighed against all their costs. Therefore, in what follows, he leaves it largely to more experienced minds to draw conclusions as to the relative expediency of the various courses suggested. His object is to point out what seem to him the most important *possibilities* for improvement.

I. *Additional Data.*

1. *Physical condition of roadbed, track, and structures.* There is no need to repeat the grounds for emphasizing the usefulness of statistics of roadbed, track, etc. The fact that knowledge or ignorance of one great part of the railway machine is involved makes a strong *prima facie* case. The further fact that such nations as Germany, Austria-Hungary, and Switzerland present such data is also noteworthy.

An illustration of the use made of such statistics appears in a statement of "Physical Characteristics of various Routes" between two points which was made recently by a certain railway at the request of financial interests, preliminary to supplying capital. The following data were embraced:

	Route 1.	Route 2.
Miles of:		
3.5 per cent. grade		
3.4 per cent. grade		
2.0 per cent. grade, etc		
0.4 per cent. grade, etc		
Equivalent miles of 1 per cent. grade		
Ascents, east and west		
Average grade per mile, east and west		
Degrees of curvature, total and per mile		
Maximum curve		

In addition to these subjects data bearing on the passing-track situation are of considerable importance.

The following tables, then, are suggested as minimum requirements for any reasonable understanding of physical conditions. Concerning this table or group of tables it may be stated that the information is easily available, with the exception of actual amount and depth of ballast in some cases, and perhaps the character of rail in sidings. The items that seem least desirable have been bracketed. It is suggested that all lines having ballast under four inches in depth under tie be classed as unballasted. (It might be well to call between four and six inches " partly ballasted.")

CONDITION OF PERMANENT WAY.

Roadbed.			Ballast.						Ties.									
Width in Feet.			Ballasted.			Unballasted.	[Cu. yds. per mile.]	Av. depth under tie.	Standard size.		Average Number per Mile.							
Total.	Embankments.	Excavations.	Stone.	Gravel.	Other.				Sawed.	Hewn.	Total.	Treated.			Untreated.		
												Oak.	Other.	Pine.	Oak.	Other.	Pine.

Tie Plates.				Rails.										
				Main Track.									Side Track.		
				Steel.							Iron.				
Fully tie-plated (miles).	Partly tie-plated.		[Av. weight (lbs.).]	100 lbs. or over.	85-100 lbs.	75-84 lbs.	65-74 lbs.	50-64 lbs.	Under 50 lbs.	Av. wt.	[Av. wt.]	[Steel.]	[Iron.]	[Av. wt.]
	Miles.	No. per mile.		Miles.										

Track.

Main Track.					Side Track.			
Single.	Double.	Triple.	Quadruple.	More.	Passing Tracks.			Other Sidings.
Miles.					Length (miles).	Av. Distance apart.	Av. Length (miles).	(Miles.)

GRADES AND CURVES.

Grades.													Curves.						Traffic Density.	
Level Line.		Line on Grade.											Straight Line.		Curved Line.				North and East.	South and West.
		North and East.						South and West.												
Mi.	%	.4-1%.	1-2%.	2-3%.	Over 3%.	Ruling Grade.		.4-1%.	1-2%.	2-3%.	Over 3%.	Ruling Grade.	Average rise and fall per mile.	Mi.	%	1°-5°	5°-10°	Over 10°.	Min. curve.	Av. degree curvature per mile.	Ton-miles (or train-miles) per mile, or loaded and empty car-miles.	Same as for N. and E.
						%	Length (yds.).					%	Length (yds.).									

It might be desirable to increase the number of degree-of-curvature and grade-per cent. groups, as do foreign governments. And the compensation of curves on ruling grades might well be included.* The preceding table, however, would seem fairly adequate. As indicated, several units of traffic density might be used, gross ton-miles per mile of line being probably the best. This, however, would involve some extra expense to the carriers,—though not a large one,—as tons and ton-miles are now generally thrown together regardless of direction. Inasmuch as the significance of distinguishing ascending and descending grades lies in unbalanced traffic movement, it is certainly desirable to bring some index of that movement into direct connection with statistics of grades and curves,—another illustration of the use of interpretative data.

Statistics of bridges, etc., might be supplemented by data concerning number of tracks, clearance, and the like. Also, railway engineers have suggested the desirability of recording the load capacity of bridges according to Cooper's Specifications, and of indicating type, whether plate girder or truss.

As limiting train service the frequency of coaling and water stations is of importance.

2. *Equipment.* On the subject of equipment: (1) more should be known concerning condition or availability; (2) there should be some unit of comparison between capacity of available rolling stock and traffic; (3) motor cars and electric locomotives might well be given special attention (motor cars being included with locomotives in European totals), and additions and new correlations bearing on these topics are recommended.

On the first point data are easily available. Availability of locomotives might be shown by distinguishing locomotives:

Total average number.

Available { In service / Laid up in good order.

In shop.

Percentage available.

*The ruling grade is generally the steepest grade on the road; it is the one which, by limiting the load which can be hauled by one locomotive, determines train-mile economies so far as grades are concerned. If there is a sharp curve on such a grade its effect is or may be very important, for it increases train resistances at a strategic point. A 6 degree curve on a 1 per cent. grade will make the grade as bad as a 1.3 per cent. one. To compensate for curvature is to cut down the grade on the curve, thus increasing the possible train-load, though perhaps adding to track mileage and total degrees of curvature.

Most roads classify power according to its need of repairs, as good, fair, poor, needing shopping. This is a matter of estimate. Repairs might be reported in this connection. Similarly information as to number of freight cars *available* would be significant. The average age of equipment would also have its importance.

On the second point, passengers and passenger-miles per passenger locomotive, tons and ton-miles per freight locomotive, and freight cars per 1,000,000 tons are shown at present: freight-car tonnage-capacity per ton-miles, or *number of cars of* 50 *tons capacity per*, say, 1,000,000 *ton-miles* would be more important in many ways. As to passenger cars, the number of cars or *number of seats per* 1,000,000 *passenger-miles* is suggested. From an operating standpoint the weight of passenger cars per locomotive or mile of track is used by our railways and foreign governments.

As some complaint has been made on the ground that the Federal Government makes unreasonable payment for mail cars,* it might be well to insert a separate item for such payments, say in the table on page 93 of the 1907 statistics.

3. *Locomotive Performance.* Locomotive performance is a subject upon which most roads have rather full and elaborate data, and concerning which foreign governments publish some statistics. Probably the railway companies would be inclined to regard such data as only of importance in a private way for operating officials. It does not seem essential that the public should know many of the details embraced in the various performance sheets, yet perhaps some proper and desirable information not now utilized lies in them. The tractive power of locomotives, and the ton- and passenger-miles produced are now shown; also total locomotive repairs and renewals, and cost of fuel, lubricants, and other supplies. In addition, for example, the various classes of locomotive-mileage might well appear, and certain averages of load and expense per locomotive-mile or per 1,000 ton-miles. Locomotive-miles, showing pusher- and helper-miles, might prevent a road from "jacking up" its train-miles. Locomotive-miles are,

* And Hoff and Schwabach, in *Nord Amerikan Eisenb.*, criticise the government on this point.

perhaps, more important for comparison of maintenance expense, for instance, than train-miles. The first step to be taken toward making train-mile costs intelligible would be a reasonably analytical statement of locomotive-miles.

To these matters the highest importance is attached by most operating officials, and justly so; for the locomotive is the immediate source of power, and expenses connected with its operation form one of the large items of cost. Especially is the fuel consumption watched, the records of fuel consumed by individual locomotives often being quite accurate. Yet we can not even tell what the average fuel consumption per locomotive is.

4. *Service.* On the score of service the following data are used and are suggested as significant;

Number of trains during the year.
Average number of trains per day { Freight / Passenger } { Average cars per train to be shown in connection.
Train-miles per day.
Train-miles per 1,000,000 population { Passenger. / Freight.
Train-miles per mile of track { Passenger / Freight } During year, per day.
Speed of trains (by class of service).

Certainly some index of speed and frequency of train service should be presented; and the use of the last three units is suggested. (The need for considering tons and cars per train should be pointed out by the statistician.)

5. *Prices of Materials.* The price of railway materials would seem to be an item which should be published, in spite of certain statistical difficulties. Justice can not be done to the constantly recurring argument that rates have fallen while expenses haverisen by cursory "statistics" gotten up by interested parties nor by mere reference to growth of ton-miles and of low-grade traffic. The subject has real importance in regard to public policy towards such matters as renewals, maintenance, and rates. Perhaps prices of the following commodities would suffice:

Ties { Oak. / Pine.	Bridge materials { Girders. / Beams.
Lumber, yellow pine.	Car wheels.
Spikes.	Freight cars.
Bar iron.	Locomotives.
Steel rails.	Coal.

Of course the cars compared should be of the same capacity, and locomotives should be compared on the basis of a cost-of-tractive-power unit. An index number expressing the weighted average of such a list might be contrasted with index numbers of average receipts per ton per mile and traffic density.

6. *Renewals.* In connection with statistics of physical condition and of prices of materials the absence of information concerning renewals is recalled. The writer would strongly urge the collection of further data on this subject and their presentation together with those now collected but not presented. Such data should cover the character and extent of the renewal, the quantity of material used, and the expense incurred. This is largely done by some State commissions, *e.g.*, Wisconsin, and completely so by the foreign governments whose statistics are best (See *Statistik der Eisenbahnen Deutschlands*, 1907, Tabellen 9, 10, and 17). Not only should rails and ties be included, but ballast also. And some such record ought to be kept for equipment. It would be essential to the full value of the information that both the cost and the tangible result or product be included.

7. *Traffic Statistics.* On the subject of traffic statistics much might be said, but only the briefest treatment is possible. The great object, from the viewpoint of public statistics, is so to analyze and to separate different classes of traffic according to specific value, distance moved, speed and accommodation required, etc., as to make it possible to roughly interpret and compare receipts or rates and ascertain net service. In the case of passenger traffic it is recommended that passenger-miles and revenue be distinguished for several different classes of ticket or service. The following classification is inserted as illustrative of the idea:*

I. *Regular full fare*

1. Local { One way / Round trip
2. Interline { Home coupon / Foreign coupon

*The ordinary minimum data kept by the railways show: Local, Home Interline, Foreign Interline. Probably a majority make further subdivision.

II. *Special and reduced rates*

1. Mileage
2. Commutation and suburban
3. Half fare
4. Government
5. Excursion and homeseekers.

Also first and second class, and Pullman passengers might be separated.

Doubtless freight traffic statistics are at present far more important, though this is most true from the private viewpoint, in which the possibility of economizing decides, and here the question of commodity statistics at once arises. Railway men differ among themselves as to the importance of such statistics, and their practice both as to number of commodities distinguished and as to whether revenue is allocated to commodities, also differs. There can be no doubt, however, that the tendency is toward fuller commodity statistics. It is entirely possible that fear on the part of the carriers that undesirable conclusions—perhaps ignorant and hasty—concerning rates would be drawn from such statistics, rather than any belief in their lack of utility, has led them to refrain from making up these data or to conceal them when made up.

The Committee on Statistics of the Association of State Railway Commissioners has had the matter of commodity statistics under consideration, being actively engaged in ascertaining what commodities or groups of commodities are best. It would seem a considerable achievement if, in the various statements of tonnage and revenue, the statistician could distinguish: minerals, lumber, live stock, merchandise; also total car load, and total less-than-car-load.* The average tons per car, *loaded cars, and all cars,* should be shown.

One small road, recently investigated by the writer, kept separate record of 45 categories, showing tons only. These figures were made from agents' abstracts of way-bills received, without the use of cards, sorting, and tabulating machines. The larger roads used from 55 to 87 commodity categories,

* From conversations in the field it would seem well for the government to put out a circular stating in some detail what commodities are to be placed in each class. This holds for the present situation.

the one using 55 having in addition less than carload, emigrants' movables, other railroad material, construction material and miscellaneous (C. L.). This road used no machines and worked from the abstracts of way bills forwarded, first checking them with abstracts received. Three others used cards and machines.* Two of these punched the cards from agents' abstracts of waybills received, and one direct from waybills. These roads showed tons, ton-miles, earnings (or "rate") per ton per mile. Another gave tons by directions, and total revenue from the commodity.

Only one of the roads visited made a full analysis of tonnage and revenue as to "local" and "through",—a road which otherwise had very scanty statistics. The Interstate Commerce Commission makes two groups: Originating on Road, and Received from connecting Roads. Each of these must be split in two to afford full information along this line: "Originating" freight (1) terminating on road, (2) terminating on other road; "Received" freight (1) terminating on road, (2) terminating on other road. Or all tonnage might be classed under these heads:

Interline { Originating / Passing over / Terminating

Local

Some additional expense to carriers would be involved in the shape of clerk hire and the information would be of relatively slight importance to them. In fact, in regard to this last point, it is rather difficult to decide whether the information is of great enough importance to warrant putting the carriers to the expense of compiling it.

Still another helpful analysis would distinguish such classes of freight service as "dead" or "drag" freight and manifest, or "red ball," as to train- and ton-miles and revenue. Such information would be easily available from the records of most carriers.

* At least two roads in addition to these use the Hollerith machines.

II. Readjustment and New Correlations.

1. *Personnel.* Something in the way of bringing number of employees into relation with a unit expressing the direct demand for their services would also be useful. The Interstate Commerce Commission gives number per mile of track and by different accounts. Why not show employees per 1,000,000 ton-miles, or

$$\left\{\begin{array}{l}\text{Employees on freight trains,}\\ \text{Freight trainmen and other}\\ \text{employees,}\end{array}\right\} \text{per 1,000,000 ton-miles, and}$$

$$\left\{\begin{array}{l}\text{Employees on passenger trains,}\\ \text{Passenger trainmen and other}\\ \text{employees,}\end{array}\right\} \text{per 1,000,000 passenger-miles?*}$$

In connection with the statistics of employees it is believed that information concerning pension, relief, and savings features would be of value. It would be of significance as bearing upon the total compensation received, and upon the general relation of employer to employee. The growth of pension and relief features has been rapid of late years.

2. *Separation of Main and Branch Lines.* In connection with the presentation of some of the foregoing statistics, as well as those already published, a point of no small importance is the separation of main and branch line statistics. One difficulty lies in the definition of the terms. As ordinarily used "main line" is that over which through trains are run, and generally through freight trains. Branch line would be the remainder, including "stubs" or feeders. To take some traffic-density basis for the distinction would rob it of a part of its significance, begging the question, as it were, in matters of comparison. On the other hand there would be some difficulty due to the fact that what some eastern trunk line would call branch-line on the through-train basis would be better than the "main line" of a small southern carrier, thus making such a wide variation as to rob the class of its significance. The difficulty might be met by subdividing through-

* In presenting the data already at hand it would mean more to correlate work and workers rather than workers and line: Thus why not show employees "conducting transportation" per 1,000,000 train-miles? Maintenance of Way employees per 100 miles of *all track* would mean more than per mile of line; and Maintenance of Equipment employees per 1,000,000 car-miles would add something (p. 59, 1907 Report).

train main line into "Trunk" and "Other" for general purposes.*

3. *More Logical Units of Statistical Judgment.* In order to insure that the best units are referred to, it is necessary that the questions be asked, (1) is it logically related to service, to cost, or to both, as the case may be? (2) is it so put as to convey the most information? Especially on the former ground the train-mile must be severely criticised. It is suggested, then, that this unit must either be given up or some of its shortcomings must be remedied. In the first event a unit more logically connected primarily with service and secondarily with cost—which is a way of indicating the present relation of our government to the railways—must be substituted. Such a unit is the ton-mile, which for reasons indicated below, certainly is logically related to service—especially in the freight service—and it is believed that it is more closely related to cost than is the train-mile. But if the train-mile is to be retained—and it has its value—such interpretative data as locomotive-miles (by classes), tons (gross) per train, and grades and curves should be made readily available in parallel columns, foot notes, or elsewhere.

So with the locomotive-mile. We badly need some index of expense and tractive power, *i. e.*, net performance. The mile does not afford an adequate one. The hour is better, but taken alone is not good enough. There can now be no doubt that a unit of tractive power direct is practicable,—a unit equally applicable to cost or service. Considerable progress has been made along this line by the railways of this country, and just as the time is bound to come when coal will be generally sold on the basis of heat units contained, so it is logical to believe that the tractive-power unit will inevitably prevail. Trains are now made up on this basis. It has been recommended by practical railway men for general use,† and the writer found it in use on one large road which he recently investigated.

*Main line is defined in the train rules of the American Railway Association as a track extending through yards and between stations, upon which trains are operated by time table, train orders, or the use of which is controlled by block signals.

†See Association of Transportation and Car Accounting Officers, Circular No. 83, released for publication, June 22, 1909.

It is the writer's conclusion that the ton-mile unit is the best available for general purposes, as in public railway statistics. It is the basic element in the final transportation product, measuring the quantity aspect. What society wants from the railway is place utility,—tons from A to B,—and if analyzed by commodities with other data as to utility available for interpretation such a unit serves well this purpose. Moreover it is as good as or better than any other unit for measuring costs. It will be immediately observed that by enumerating gross and net ton-miles the operating and traffic viewpoints are placed upon a common basis of measurement. In the freight service train-miles and train expenses correspond closely with gross ton-miles. The tractive power element is expressed in tons. And through these factors other classes of expense are related. Thus ton-mileage affords the best common denominator for measuring train- and station-service expenses. Again cost and service are best correlated on a ton-mile basis, and rates are, of course, made upon it.

Nor is the element of practicability to be overlooked. The ton is the natural unit of observation. The ton-mile is the basis of existing private statistics, operating and traffic. It is easily ascertained and checked; there is no difficulty in definition. The chief difficulties* lie in the lack of analysis as to commodity (on the utility side), and distance (on the cost side), both of which difficulties would be largely overcome by suggestions made above.

Several improvements may be made along the line of the criticism suggested by the second question. For example one sometimes wonders why no average wage for all employees is included in our report, and the first thought is to justify the omission on the ground that the average is of little value, even if not misleading, in such cases. But why not use the median—the middle wage in a series arranged according to magnitude? And quartiles and deciles would make the

*** The varying percentage of terminal expense is a difficulty. A ton mile varies in cost accordingly as it is one of a few tons hauled many miles or many tons hauled few miles. But this could be minimized by classifying ton miles into distance groups as Belgium does. Or the time may come when cost of handling freight at stations may be available as a basis for deducting terminal expenses All large roads now have such figures for important stations.**

distribution clear. Or why not weight the average according to the number receiving the various rates or according to the expenditure for the group?

Again, the average (arithmetic) haul per ton, average trip per passenger, and average capacity per car, etc., have not the meaning that the mode—the most common case—would have.* Here, however, as elsewhere, the difficulty lies in the additional time and expense of preparing analyzed figures. At present merely the total mileage or tonnage is reported and divided by the total number of tons, passengers, cars, etc.

Some steps have already been taken toward an analysis of freight traffic by commodities; but not until greater progress has been made along this line can a median or weighted average be substituted for the present average receipt per ton per mile, thus enabling us to allow for the effect of varying percentages of low-grade freight.

4. *Accidents.* These general deficiencies are to be noted: (1) certain desirable distinctions as to location of accidents, class of service, etc.; (2) the real *cause* of accidents as distinct from an *occasion* or description of its nature; (3) interpretive statistics of traffic density, all train accidents, etc. Under the first head might be mentioned: separation of passenger and freight service statistics; and of accidents at stations from those on other track. The second criticism is even more important. It should be possible to assign accidents among the classes: passenger's fault, employee's fault, faults of plant and material. And the last might be subdivided to show whether inherent or due to abnormal weather conditions. Collisions and derailments are not sufficiently classified as to nature and cause. To put collisions, derailments, parting of trains, in a table as co-ordinate, amounts to a cross classification: parting of trains results in collisions or derailments. And so collisions are due to running past signals; or derailments follow from broken rail, ties, etc.† For classifications of accidents which get down more nearly to causes, it is suggested that the statistics of England and

* Belgium classifies tons and ton-miles by distance groups, *e. g.*, 1-10 km., 11-20 km., etc. (Railway statistics, 1907, p. 179, pt. A.)

† Cf., p. 136 of 1907 Interstate Commerce Commission Report.

Belgium be examined. To remove the validity of the third criticism it would be well to show ratios of fatal accidents to train-miles,—total, and passenger and freight,—passenger-miles, and miles of track. In the summary table for a series of years let the number of passengers appear and passenger-train and all-train miles. Doubtless, too, the number of train accidents in the passenger service, regardless of personal injuries, would be of value; for all these are potential fatalities and indicative of efficiency as to safety of service.

5. *Compilation and presentation.* Meanwhile the writer is aware that difficulties as to presentation in the shape of increased delay and space, etc. are thickening. In part he would escape obligation on this score by repeating that his main end is to criticise and suggest *possibilities*. But take the case of statistics of physical condition, for example. Here the data gain in value in proportion as they are made specific by presenting them for individual lines; and, so important does the information seem, that the addition of a new table to the already stout volume of Interstate Commerce statistics would seem desirable. It might be well, however, to present only such significant items as ruling grade, average rise and fall, sharpest curve, average degrees of curvature, average weight of rail, etc. in the extended table; while giving fuller details for a few important roads representative of each section.

In fact the scheme, used by England, of attempting certain important details for a group of large roads only, seems to be one which it is now time to utilize. Where (1) data can not be gained from many small roads, or (2) the time and trouble of enumeration would be too great, this might be done with profit; and it is the writer's opinion that such figures would mean much more than many now presented by the Interstate Commerce " groups."

As to the increase in traffic statistics, no new extended table would be involved, but two or three additional columns in existing tables and one or two new short general tables. Here again it is recommended that data be presented by typical individual roads or " systems."

If so practical and technical a suggestion might be hazarded, it would seem that the logical way to present increased tables

would be to add to the size of the present volume, that is change it from octavo (6 x 9 in.) to quarto (say 9 x 11 in.). What is needed in many cases is more columns in order to give a more comprehensive and analytic view of the field covered by the table, and some modification in the direction of German statistics in this regard, is desirable.

With the new monthly bulletins of revenues and expenses and some slight adjustment in the customary "advance copy," no reason for fearing greater delay exists. No information has been suggested which railways do not make up.

On certain points there is a considerable lack of uniformity apparent in the classifications, definitions, and statistical bases used by the railways, and in such cases some ruling or recommendation should be made by the Commission, especially if additional data are to be asked for. Substantial uniformity in most matters now reported to the Commission is believed to exist, average daily wages and commodity statistics being the least satisfactory in this regard. But it is unfortunate in more than one way that any of the bases upon which interstate commerce statistics are made up should differ from those used in preparing similar data of the same name for private operating statistics. Such matters as gross tons per train, weight of empty cars, less-than-carload minimum weight, classification of repairs, and condition of equipment are lacking in uniformity of definition and compilation.

Doubtless some allowance must be made for time and place factors. The statistical compilations made by railways are continually changing, and not always in the direction of greater comprehensiveness of detail. From time to time officials of the same railway will call for some statement to meet a special need. This may even go on for a number of years through blind inertia. But it is not regular, standard information. Again the needs of one road may call for detailed statistics of some phase of operation or traffic, that would be useless or unprofitable to another. It may, in some cases, be a nice question as to whether the information is so important from the public point of view as to warrant putting those roads which would not otherwise made use of it to the expense of preparing it.

REFERENDA IN MASSACHUSETTS AND BOSTON.

By Edward M. Hartwell.

Referenda in Massachusetts fall mostly into one of three principal classes, viz.: (1) General referenda, on matters relatting to the constitution of the State Government, or its relation to the National Government; (2) Special referenda, relating either to the charters or charter amendments of cities, or to the acceptance of other special acts; and (3) Recurrent referenda whereby, in accordance with the Revised Laws, each city and town is annually called upon to vote yes or no upon the question of licensing the sale of intoxicants within its borders.

In this connection it will be best to consider general referenda chiefly, without attempting to discuss referenda of the second and third classes, whose numbers run into the hundreds, although certain of them must needs be mentioned in outlining the record of the voters of Boston as regards electoral contests and referenda respectively.

In attempting to measure the interest of the electorate and the significance of the votes cast upon the referenda under review, two criteria have been adopted: (1) the percentage of the total vote upon a given question to the total vote cast for Governor of the State in the same year; and (2) the percentage of the major vote upon a given question to the total vote upon that question. However, owing to the inadequacy of the records, whether in print or manuscript, all members of the series of general referenda cannot be satisfactorily tested by either criterion. Much less is it possible to state, in respect to referenda submitted before 1890, what proportion of the registered or of the qualified voters actually voted for Governor or on a referendum in a given year.

It may be noted that in gathering the data, here brought together, it has been necessary to search the original records, in the archives of Massachusetts and of Boston, many of which have not been printed. The records regarding the votes on

the earlier referenda are so meagre and incomplete that it seems best to forbear attempting to tabulate the facts regarding referenda submitted by the Legislature prior to the year 1780, when the Constitution of Massachusetts was adopted and the first election of a Governor of the State occurred.

Referendum is a borrowed word which has gained currency in our political vocabulary only recently, but the practice of referring constitutional questions to the voters of Massachusetts by the Legislature is an old, one might almost say primitive one. The practice is based on the doctrine that the consent of the people is an indispensable factor in establishing the organic law. The main object of this study is to set forth the nature of the questions referred to the voters since the Province of Massachusetts Bay assumed "civil government" as a State, and to determine the character and amount of the interest shown by them in such questions. But it should not be overlooked that the law-givers of the Colony of New Plymouth and of the Colony of Massachusetts Bay exemplified the doctrine of common assent, more than a century before the outbreak of the Revolution, in measures that may be properly termed referenda.

In the enactment of fundamental laws both the Pilgrims and the Puritans were careful to secure the consent of the people. In 1636 when the Plymouth Colony adopted its first code of laws, it was enacted "That the laws and ordinance of the Colony and for the Government of the same be made only by the freemen of the Corporation and no other." In 1643 when the New England Confederation was formed, for defense against the Indians, by representatives of Massachusetts, Connecticut, New Haven, and New Plymouth, the delegates from the latter "referred the Articles of Confederation to the people of their Colony and refrained from signing until these had received the popular assent." (See Lobingier's "The People's Law," p. 77.)

The first code of laws of the Massachusetts Colony, known as "The Body of Liberties," was enacted by the General Court in 1641. The enactment was the last of a series of measures initiated in 1636 by an order of the General Court providing for "a draught of laws . . . . which may be the Fundamentals

of this Commonwealth." Governor John Winthrop (History ii 66) notes that the Body of Liberties "had been composed by Mr. Nathaniel Ward . . . . and had been revised . . . by the Court and sent forth into every town to be further considered of, and now again in this Court (*i.e.*, of December 10, 1641) they were revised, amended and presented, and so established for three years, by that experience to have them fully amended and established to be perpetual."

Inasmuch as the submission of the Body of Liberties to the freemen of the towns appears to have been the first measure resembling a referendum taken by the Government of the Bay Colony, a brief statement of the matters referred and the circumstances attending that reference will not be out of place. The right of the people to participate, through their deputies, with the magistrates in the enactment of laws had been conceded after considerable dispute in the period 1631–1635. Governor Winthrop tells us that in May, 1635, on the demand of the deputies, "it was agreed that some men should be appointed to frame a body of grounds of laws, in resemblance to a Magna Charta, which being allowed by some of the Ministers and the General Court, should be received for fundamental laws." Although committees to draft such laws were appointed both in 1635 and 1636 little was accomplished by them. In March 1637, the General Court, alleging that the want of written laws had led to "many doubts and much trouble," ordered "that the freemen of every town should assemble together in their several towns, and collect the heads of such necessary and fundamental laws, as may be suitable, and the heads of such laws to deliver in writing to the Governor before the 5th day of the 4th month, called June next." The order further provided that eleven persons, with the Governor at their head, should make "a compendious abridgment of the same, to be presented to the General Court for confirmation or rejection." Apparently the action so ordered was taken though not very promptly, as it was not until November, 1639, that the General Court passed an order, instructing a joint committee of Magistrates and Deputies to "peruse all those models which have been or shall be further presented concerning *a form of government* and laws to be established."

Having drawn the models up into one body, the committee were charged to "take order that the same shall be copied and sent out to the several towns, that the elders of the churches and freemen may consider of them against the next General Court." Evidently the elders and freemen took their time in the matter, as the General Court passed a vote, May 13, 1640, concerning the "Breviate of Laws," urging the elders and freemen to whom they had been sent "that they will endeavor to ripen their thoughts and counsels about the same by the general court in the next 8th month." Finally it was voted by the Court on December 10, 1641, that "the bodye of laws formerly sent forth among the Freemen was voted to stand in force."

It might be argued that the order of March 12, 1637, resembles both an initiative and a referendum. Perhaps it is as well to consider it an embryonic or inchoate referendum, from which developed the order of November 5, 1639, and to call the latter the first Massachusetts referendum. In the Body of Liberties one finds reflected certain distinctively popular views and tendencies that ultimately found clear and well nigh complete expression in the State Constitution of 1780. Of that Constitution the Body of Liberties, even more than the Charter of 1629, was a prophetic type. The Body of Liberties was more than a code of statutes; it partook of the nature of a bill of rights and a frame of government, as well.

The second paragraph of "The Body of Liberties" reads as follows: "We hould it therefore our dutie and safetie whilst we are about the further establishing of this Government to collect and express all such freedomes as for the present we foresee may concerne us, and our posteritie after us. And to ratifie them, with our sollemne consent."

Of the ninety-eight sections into which "The Body of Liberties" is divided twenty-one are included under the title: "*Liberties more peculiarly concerning the freemen.*" Among the most significant of them are the following:

"66. The Freemen of every Towneship shall have power to make such by laws and constitutions as may concerne the welfare of their Towne, provided they be not of a Criminall, but onely of a prudential nature, etc.

"67. It is the constant libertie of the freemen of this plantation to choose yearly at the Court of Election out of the freemen all the General officers of this Jurisdiction."

"68. It is the libertie of the freemen to choose such deputies for the General Court out of themselves, either in their owne Townes or elsewhere as they may judge fitest," etc.

"74. The freemen of Every Towne or Towneship, shall have full power to choose yearly or for lesse time out of themselves a convenient number of fitt men to order the planting or prudentiall occasions of that Town, according to instructions given them in writing, Provided nothing be done by them contrary to the publique laws and orders of the Countrie, provided also the number of such select persons be not above nine."

It is to be noted that under Section 74 "of the Body of Liberties" the powers of the Selectmen were conditioned on "instructions given them in writing" by the freemen. Later it became customary for the freemen in town meeting to adopt written instructions to their representatives in the General Court also. Thus, from the Boston Town Records, it appears that, on March 14, 1652–53, "at the general Towne meeting" it was ordered: "That the Commissioners for the Town and the Seleckt men are desired to draw up instrucktions for the deputies against the Generall Corte they or any five of them ar to doe it."

Then this follows: "Ensign Josh. Scotto, Ensign Robt. Scott, Mr. Belcher, Edward Flechar and Sargt. Nathll. Williams ar desired to draw up Instrucktions for the Townesmen (select men) to ackt by, to be in adition to what instructions they alredy have."

That the "townes men" of the Plymouth Colony, enjoyed rights similar to those secured to the freemen of the Bay Colony is indicated by the following, which was enacted by the General Court at Plymouth on September 1, 1640: "That the Constables of every Towne within the Government shall warne the townes men whereof they are to come together as they doe for other townes businesse when the Committes (deputies) shall think it fitt, as well to acquaint them with what is propounded (proposed) or enacted at the Court as to receive instructions for any other business they would have done."

Giving the voters the right to instruct their representatives in the General Court amounted practically to giving them the initiative. As has already been shown, the principle of the referendum was recognized in the ratification by the freemen of the fundamental laws of both colonies.

Not only was the principle of common assent recognized and embodied in the fundamental laws, but those laws provided in the town meeting a well devised instrument whereby the freemen were enabled to give effect to their deliberations and votes—as regarded both their local affairs and the "occasions of the Country."

There were several instances within the colonial period of what may be termed primitive or incipient referenda in contradistinction to the series of definitively constitutional referenda that began in 1776. In this connection the following cases may suffice although it is quite possible that an exhaustive scrutiny of certain manuscript sources in the Massachusetts Archives would disclose still other cases in which the General Court called upon the freemen of the towns to intimate their assent or dissent touching certain questions. It may be added that the General Court sometimes referred questions to the clergy and the freeman. Thus on May 29, 1644, it was ordered by the General Court "That it shall be lawful for the deputies of this Court to advise with their elders and freemen, and take into serious consideration whether God do not expect that all the inhabitants of the plantation allow to the magistrates, and all other that are called to country service a proportionable allowance and that they send in their determinations and conclusions to the next General Court."

What opinions the elders (the ministers) and the freemen expressed regarding the question of compensating the members of the General Court does not appear in the records of that body. From 1644 till the charter was revoked in 1684, there was much variance between the Magistrates and the Deputies touching their respective privileges and powers, and the opinion and advice of the clergy as well as of the freemen were formally asked for by the General Court more than once. In 1685, curiously enough, two contradictory reports were made to the General Court as to the opinion and advice of the Elders

on the expediency of resisting if a forcible attempt should be made by the agents of the King to secure possession of the revoked charter for cancellation. On another occasion the Elders pointedly informed the Deputies that the government was " aristocratical " as well as " democratical " in its nature. The Magistrates and Elders—like many of their successors—had a rooted horror of a pure democracy.

In 1644, when the Massachusetts Magistrates and Deputies were at odds as to the rights and powers of the latter in legislative matters, the General Court, on November 13, passed an order which provided: (1) that for a year neither Magistrates nor Deputies should " exercise a negative vote " upon the votes of the other, " if the freemen shall accept thereof "; and (2) that a trial shall be made for one year " by choice of twenty deputies of the several shires to equal the number of magistrates chosen upon the day of election, the choice of them to be thus divided: Suffolk shall choose six; Middlesex six; and Essex and Norfolk being joined in one shall choose eight." In pursuance of this plan it was "further declared that every town shall forthwith, namely by the last of the next month, send in under the hands of their late deputies their vote assenting or dissenting to the proposition."

The records are silent as to the results of this referendum; but John Winthrop in his History of New England (vol. ii, page 24) says " the greater number of towns refused it. So it was left for the time." But the Magistrates brought forward substantially the same plan in 1645, when they asked the Deputies to concur in an order to refer to the freemen the question whether sixteen deputies, *i. e.*, four for each county, with an equal number of Assistants, together with the Governor and Deputy Governor, should constitute the General Court. The proposed referendum failed to be authorized because the Deputies refused their concurrence. Their reply reads as follows: "The deputies being in this particular well acquainted with the mind of their towns cannot consent to this way of lessening the deputies."

The General Court on November 11, 1647 passed an act to limit the number of deputies to one from each town, but suspended the act, and later, on the same day, confessing its

uncertainty whether the towns preferred to send one or two deputies, and "being desirous to know the mind of the country herein," the Court ordered "that a copy of this order shall be sent to the constable of every town who shall call the freemen together and acquaint them herewith that so they may declare their minds herein, etc."

The result of this referendum is indicated by the following entry under March, 1647-48 in the records of the General Court: "The most of the freemen desiring their former liberty of sending one or two deputies to the General Court, the former wonted liberty is continued and the former act is repealed."

The rising of the people against Sir Edmund Andros (who had served as Royal Governor since May 20, 1686) occurred on April 18 and 19, 1689. On the twentieth of April fifteen men (including five Magistrates who had been chosen by the General Court of Elections on May 12, 1686) repaired to the Town House in Boston and assumed direction of affairs, under the style of "The Council for the Safety of the People and Conservation of the Peace." Simon Bradstreet, whose election as Governor in 1686 had been nullified by the arrival of Andros, was chosen President of this council. The council immediately joined to itself, by invitation, twenty-two other prominent men, and as the *de facto* government held almost daily sessions. The records of the Council of Safety, under date of May 1st, contain the following: "There being some agitation in Council of the Necessity of Settling some form of Government, and several Gentlemen appearing out of the Country moving the same thing, debate was deferred till the morrow."

On May 2d, there being 31 members present, the Council of Safety, "agreed unto a paper . . . signifying the expedience of the several Towns . . . to meet and choose one or more able, discreet persons . . . to convene at Boston upon the ninth instant, . . . fully impowered . . . to consult, advise, join and give their Assistance to the Council now Sitting." This "signification" provided that Boston might send four representatives but no other town should send more than two.

On May 9th, the Council of Safety to the number of 27, and 66 representatives from 44 towns met together. The next day the Representatives addressed a "Declaration to the Council on behalf of the Towns for which they appeared: "That for the ensuing part of this year, The Governor, Deputy Governor and Assistants chosen and sworn in May 1686 according to our Charter Rights, and the deputies then sent by the Freemen of the several Towns to be (are) the Government now settled in our above said Colony."

The extant records regarding the returns from the Towns in reply to the signification of May 2, although incomplete, afford evidence that many of the Towns expressed a desire to have the Old Charter "reassumed." But it appears probable, from the records, that the Declaration of the Representatives on May 10, was substantially unanimous.

The Council in reply to the Declaration said: "We think it necessary the people of the said several Towns and Villages do more fully and expressly signify their Mind in that Matter and that the other Towns and places . . . be notified to Convene their respective Inhabitants to manifest their minds relating to the same . . . and choose so many as they shall think convenient to join with them for the Common Safety and Conservation of the Peace and the Exercise of such farther Acts of Authority as shall be necessary."

The Representatives assented, and declared that "*they continued the present Council in the same Station until May 22d,*" —the date agreed upon for the convention proposed by the Council for the Convention of Council and Representatives.

On May 22, twenty-six members of the Council and 74 Representatives from 54 towns assembled in Boston. The returns of 52 towns and villages, on the referendum of May 10, are still preserved. Of that number 43 towns appear to have pronounced in favor of the reassumption of the charter, and 9 for continuing the Council of Safety. At any rate, the Representatives again urged the Council to act in the way suggested in the Declaration of May 10; and on May 24, twelve of "the Old Magistrates" consented "for the Satisfaction of the people to accept the care and Government of the people of this Colony according to the rules of the Charter

. . . until by direction from England there be an Orderly Settlement of Government," with the promise that additional Assistants should be chosen and that the Representatives of the Towns should again convene with them. But the Old Magistrates were careful to add that they did "not intend an Assumption of Charter Government and would not be so understood."

On May 25, the Council of Safety, from which the 22 members by invitation had been dropped, organized by the choice of Simon Bradstreet as President and Isaac Addington as Clerk.

Thereupon the Towns appear to have held new elections, at which five additional assistants were chosen; and on June 5, representatives to the number of 55 from 41 towns assembled in Boston, chose a Speaker, and adjourned till the next day. On June 6, the Representatives addressed a "Declaration" to "S. Bradstreet, Governor, Thomas Danforth, Deputy Governor, and the Assistants now sitting," saying:

"We do now humbly pray . . . you would be pleased by virtue of the Authority devolved on you by us as Representatives of the several Towns in this Colony to accept Government according to Charter Rules by the name of Governor and Council for Massachusetts Colony, and exercise such authority, in the said Colony as was formally (sic.) and by the Laws made by our Charter Government . . . until farther order from England, and that the Major General and five Assistants lately chosen take their respective Oaths; and pray there may be no Delay in this Matter. We cannot proceed in anything till this foundation be settled."

On June 7, the Governor and Council voted to accept the foregoing declaration, and took the oaths of office. On June 22, they declared that all laws that were in force on May 12, 1686, should continue in force until farther settlement. The Council of Safety and the Convention of Representatives continued to meet from time to time. The Representatives on January 24, 1689, voted "That this Convention be henceforth termed a General Court and be accounted such in all Respects." The provisional government consisting of the Governor and Council and the General Court continued to rule the Colony until Sir William Phips became Governor on

May 14, 1692, under the Province Charter granted by William and Mary, October 7, 1691.

Under the charter granted in 1691 by William and Mary to Their Majesties' Province of Massachusetts Bay (which included the future District of Maine in addition to the original colonies of Plymouth and the Bay), the freeholders continued to exercise the liberties of the colonial freemen under some restrictions that need not detain us.

In the period 1765–1780, the "Freeholders and other Inhabitants" in their town meetings, by their choice of Representatives to the General Court and to county and State conventions, by their election of Committees of Correspondence and Safety, by their Instructions to their Selectmen and Representatives; and by their votes on referenda exercised a large and decisive influence in the controversy between the Colony and the Crown and finally in 1780 secured the adoption of the Massachusetts Constitution of 1780, which was the first State Constitution in America that was framed by a convention chosen by the people, and ratified by the people themselves after full and free discussion.

"The American Revolution broke out," says de Tocqueville, "and the doctrine of the sovereignty of the people came out of the townships and took possession of the State. Every class was enlisted in its cause; battles were fought and victories obtained for it; it became the law of laws."

The period 1765–1775, *i. e.*, from the passage of the Stamp Act till the adoption of a provisional form of government after the Evacuation of Boston, affords numerous instances in which Massachusetts Towns exemplified the principles of the initiative;—definitive referenda do not emerge until 1776, when all of the Towns were asked by the House of Representatives to make known their sentiments on the question of independency. In this period Instructions by the Towns, particularly the Town of Boston, played a large part in the controversy with the King and Parliament and the Royal Governors, and in the development of the American doctrine of popular rights. Indeed a fair sized treatise on the Nature of Government and the Rights of the Subject might be compiled from the Instructions to its Representatives by the Town of Boston. A few

instances must suffice; but in passing, it may be remarked that many of the replies and memorials to the Governor by the House of Representatives which largely make up "Bradford's State Papers of Massachusetts" are but restatements of utterances by Committees on Instructions or Committees of Correspondence chosen by the Town Meeting of Boston.

September 18, 1765, the Instructions for the Representatives of the Town, after expressing "the greatest Dissatisfaction" with the Stamp Act, add: "And we think it incumbent upon you by no Means to Join in any publick Measures for Countenancing and assisting in the Execution of the same: But to use your best endeavors in the General Assembly, to have the inherent unalienable Rights of the People of this Province asserted and vindicated." The instructions were passed unanimously, but the size of the vote was not stated; however, at the election of Representatives, May 14, 1765 there were 641 votes cast.

It should be remembered that the voters in town affairs were more numerous than the body of electors who were privileged to vote for Representatives to the General Court; and that the records seldom give the number of votes cast at a general town meeting or for the election of town officers.

In the record of a Town Meeting held December 1, 1766, the following occurs:

"That the Sense of the Inhabitants may be taken respecting a Bill now pending in the House of Representatives, entitled '*An Act for granting compensation to the Sufferers and of free and full pardon, Indemnity and oblivion to the Offenders, in the late Times,*' was read, and the Bill laid before the Town for its consideration; and the Town apprehending said Bill to be agreeable to his Majesty's gracious *Recommendation*—Voted, that the Representatives be and hereby are Instructed to use their Endeavors to the passing of said Bill into a law." The number voting is not stated, but at the Election of Representatives, held on May 6 of the same year, 746 votes were cast.

The purpose of the Bill was to compensate, out of the Province Treasury, Lieutenant Governor Hutchinson, Judge Oliver and others, who had incurred large losses at the hands of the mob during the Stamp Act Riots in Boston, in August,

1765. The Bill was framed by the House of Representatives early in November, 1766, and ordered "to be published for the consideration of the Towns." On November 13, the House asked Governor Bernard to grant a recess in order that the members of the House might consult their constituents. Accordingly a recess was granted by the Governor from November 13 till December 3, 1766. On December 5 the Bill was passed to be engrossed: yeas, 53; nays, 35. Of the four Boston Representatives three voted yea, the fourth being Speaker of the House.

In 1772 Governor Hutchinson's refusal to comply with a petition of Boston to allow the General Assembly to meet impelled the Town on November 2, to vote unanimously, on the motion of Mr. Samuel Adams "That a Committee of Correspondence be appointed to state the Rights of the Colonists and of this Province in Particular as Men, as Christians, and as Subjects; to communicate and publish the same to the several Towns in this Province and to the World as the sense of this Town, with the Infringements and Violations thereof that have been made. Also requesting of each Town a free communication of their Sentiments on this Subject." The Committee's report, a lengthy one, was duly considered by the Town, and unanimously adopted, on November 20, 1772. Although the number voting is not given, the records show that 723 votes were cast on May 6, 1772, at the election of Representatives.

In its statement of Rights and List of Infringements and Violations of those rights, this declaration both in its subject matter and phraseology reads somewhat like a forecast of the Declaration of Independence in 1776. The Statement of Rights, by Sam Adams, begins as follows: "Among the natural Rights of the Colonists are these, first, a Right to Life; secondly, to *Liberty*; thirdly to *Property*; together with the Right to support and defend them in the best manner they can. These are evident branches of, rather than deductions from the Duty of Self Preservation, commonly called the first Law of Nature. . . . When Men enter Society, it is by voluntary consent; and they have a right to demand and

insist upon the performance of such conditions, and limitations as form an equitable *original compact.*"

The List of Infringements numbers twelve in all. One will suffice here. " 1st. The British Parliament have assumed the power of legislating for the Colonies in all cases whatsoever, without obtaining the consent of the Inhabitants, which is ever essentially necessary to the right establishment of such a legislative."

While suffering from the effects of the Boston Port Bill, the people of Boston were greatly stirred by the report that Parliament had passed still other " intolerable Acts." At a Town Meeting held on July 26, 1774, Boston " accepted Paragraph by Paragraph " a Letter to the other Towns relative to " Two Acts of Parliament, altering the Course of Justice and annihilating our free Constitution of Government." The second of the acts alluded to was " Chapter 45, Acts of 14 George III " (1774) which provided that no Town meeting except for an election should be held in the Province without the written permission of the Royal Governor, who was also given power to prescribe what matters should be considered in such meetings.

On September 1, 1774, General Gage, the last Royal Governor, issued writs for an election of Representatives to the General Court to be convened on October 5 at Salem. On September 25, an election was held for four Representatives from Boston, at which 362 votes were cast. At the same meeting three persons were appointed and empowered by the town: " in Addition To our four Representatives to join with the Members who may be sent from the Neighboring Towns in the Province, at a Time to be agreed on, in a General Provincial Congress."

The Representatives from Boston were instructed to " adhere firmly to the Charter . . . and to do no Act which can possibly be construed into an Acknowledgment of the Act of the British Parliament, for altering the Government of Massachusetts Bay . . . And, as we have reason to believe that a conscientious Discharge of your Duty will produce your Dissolution as an House of Representatives, We do hereby impower and instruct you to join with the Members, who may be sent from this and the Neighboring Towns

in the Province, and to meet with them on a time to be agreed on, in a General Provincial Congress, to act upon such Matters, as may come before you, in such a manner, as shall appear to you most conducive to the true Interest of this Town and Province, and most likely to preserve the Liberties of all America."

On September 28, General Gage issued a proclamation "discharging the members from attending" and declared he would not meet the General Court on October 5. The time had come for testing the faith of the People of Massachusetts in the doctrine of common assent, inasmuch as the action of Gage was tantamount to a dissolution of the House of Representatives.

During the interregnum 1774–1780, the Government of Massachusetts was provisional and somewhat anomalous not to say revolutionary in character; naturally enough appeals from the law-givers to the people to signify their wishes and opinions were unusually frequent and direct.

Some ninety Representatives assembled at Salem on October 5, 1774. On October 7, they resolved themselves into a Provincial Congress (the First) which dissolved on December 10, 1774, after assuming direction of affairs and calling on the Towns "to elect as many members as to them shall seem necessary and expedient to represent them in a Provincial Congress February 1, 1775." This Second Congress, in which 196 towns (177 in Massachusetts and 19 in Maine) were represented by 229 members, was dissolved on May 29, 1775, at Watertown, where the Third Provincial Congress, elected at the call of the Second Congress, convened on May 31, 1775. General Gage stigmatized the Provincial Congress as "a new-fangled legislature."

As soon as the meaning of the Regulating Act became clear, viz., Chapter 45, 14 George III, which forbade the holding of town meetings without the written permission of the Governor, the question of establishing a new form of government began to be agitated. Thus, one of Samuel Adams's correspondents, in a letter dated July 29, 1774, declared "It would be best to form a New Charter for ourselves," and on September 12, Dr. Joseph Warren wrote to Adams: "Many among us and almost all in the Western Countys are for taking up

the old Form of Government according to the first Charter." On December 10, 1774, the day it dissolved, the First Provincial Congress tabled a report "relative to assuming Civil Government."

In the Second Provincial Congress it was moved on May 12, 1775: "That the sense of the Congress be taken . . . . whether there is now existing in this Colony a necessity of taking up and exercising the powers of civil government in all its parts." Four days later the Congress voted to send a committee to Philadelphia to present "an application to the Continental Congress for obtaining their recommendation for this Colony to take up and exercise Civil Government."

On June 9, 1775, the Continental Congress passed a Resolve advising the Provincial Congress to consider the Governor and Lieutenant Governor "as absent and their offices vacant," and recommended the Provincial Congress "to write letters to the inhabitants of the several places which are entitled to representation in the assembly, requesting them to choose such representatives, and that the Assembly when chosen to elect Councillors; and that such assembly, or council, exercise the powers of government until a governor of his majesty's appointment will consent to govern the Colony according to its charter."

Accordingly the Third Provincial Congress voted June 20, 1775, to send a letter to the Towns calling upon them to choose Representatives for "a general court or assembly," to convene at Watertown on July 19, 1775. The Towns did so, and the First House of Representatives of the State of Massachusetts Bay in New England met on that date. Two days later it chose 28 Councillors, from among its 203 members who represented 189 out of 268 towns. The Councillors, usually termed "The Honorable Board," exercised a mixture of executive, judicial, and legislative functions until the Constitution of 1780, which provided for a Governor, Lieutenant Governor, Council, Senate, and House of Representatives, took effect in September, 1780.

The following summary statement may serve to show the number and indicate the nature of the questions referred to the voters of Massachusetts in 131 years.

SUMMARY OF REFERENDA IN MASSACHUSETTS, 1776-1907.

A. SPECIAL QUESTIONS.

Year.		Accepted.	Rejected.	Total.
1776...	Do you favor a Declaration of Independence?	1	-	1
1778...	Do you favor a Confederation of the Colonies?	1	-	1
1895...	Should Municipal Suffrage be granted to Women?	-	1	1
	Totals	2	1	3

B. PROPOSALS TO HOLD CONSTITUTIONAL CONVENTIONS.

Year.	Accepted.	Rejected.	Total.
1776	1	-	1
1777	1	-	1
1779	2	-	2
1795	-	1	1
1820	1	-	1
1851	-	1	1
1852	1	-	1
Totals	6	2	8

C. CONSTITUTION SUBMITTED.

Year.	Accepted.	Rejected.	Total.
1778	-	1	1
1780	1	-	1
Totals	1	1	2

D. Constitutional Amendments Submitted.

Year.	Accepted.	Rejected.	Total.
1821	9	5	14
1831	1	-	1
1833	1	-	1
1836	1	-	1
1840	1	-	1
1853	-	8	8
1855	6	-	6
1857	3	-	3
1859	1	-	1
1860	2	-	2
1863	1	-	1
1877	1	-	1
1881	1	-	1
1885	1	-	1
1889	-	1	1
1890	2	-	2
1891	2	-	2
1892	1	-	1
1893	1	-	1
1894	1	-	1
1896	-	2	2
1907	1	-	1
Totals	37	16	53
Grand totals	46	20	66

In 1776, the First House of Representatives of the State of Massachusetts Bay submitted what may be termed the first referendum, to the Towns of the whole State. It is found in the following Resolve passed May 9, 1776, by the House of Representatives:

"Resolved: That it be and hereby is recommended to each Town in this Colony who shall send a member or members to the next General Assembly fully to possess him or them with their Sentiments relative to a Declaration of Independence of the United Colonies of Great Britain to be made by Congress and to instruct them what Conduct they would have them

observe with regard to the next General Assemblys Instructing the Delegates of this Colony on that Subject."

It is noteworthy that the Council on May 10, the last day of the session, voted not to concur. But the House adhered to its Resolve which was accordingly printed for the benefit of the several towns in the newspapers.

The circumstances that led to the Resolve of May 10, are of especial interest. Elbridge Gerry, then attending the Continental Congress as a Delegate from Massachusetts, wrote from Philadelphia on March 26, 1776, to James Warren, Speaker of the first House of Representatives, as follows:

"You are desirous of knowing what capital measures are proposed in Congress. I refer you to what is done concerning privateering. This will not satisfy you and *I hope nothing will, short of a determination of America to hold her rank in creation and give law to herself*. I doubt not this will soon take place. I wish sincerely you would originate instructions, expressed with decency and firmness your own style—and give your sentiments as a Court in favor of independency. I am certain it would turn many doubtful minds, and produce a reversal of the contrary instructions adopted by some assemblies."

It is highly significant that the House, which was about to dissolve, did not undertake to express its "sentiments as a court," but instead asked the Towns to give instructions to the Second House of Representatives.

No complete official statement of the returns of the Towns can be found. It is possible to name but 38 towns that voted on the question, between May 20 and July 25. Barnstable, whose town meeting was held on July 25, was the only one of the 38 towns that voted against the proposed Declaration. In most of the towns, the vote for the Declaration appears to have been unanimous.

On June 13, Joseph Hawley, a Member of the Council, wrote to Gerry: "You cannot declare Independence too soon, when the present House here called last week for the instructions of the several towns touching Independency, agreeable to the recommendations of the last House, it appeared that about two-thirds of the towns in the Colony had met and all instructed in the affirmative, and generally returned to be unanimous. As to the other towns, the accounts of their

Members were, either that they were about to meet or that they had not received the notice, as it was given only in the newspapers. Whereupon, the House immediately [*i. e.*, on June 7] ordered the unnotified towns to be notified by handbills, and in a short time undoubtedly we shall have returns from all; and it is almost certain that the returns will be universally to support the Congress, with their lives and fortunes, in case of a Declaration of Independence."

The incompleteness of the returns on this first referendum is typical of the returns on most of the referenda of this period. Hawley's statement that "about two-thirds of the towns had met" affords corroborative evidence of the writer's own conclusion that it rarely happened that more than two-thirds of the towns took the trouble to vote on the questions referred to them in the period 1776–1780.

It was a well established doctrine of the time that members of the Legislature were responsible to those who chose them and were subject to instructions in their representative capacity. The instructions of the towns as set forth in the returns from 32 towns which are preserved in the State Archives teem with orotund and vigorous expressions of the political philosophy of that day. Some of them take the form of a disquisition on government. For instance, the instructions to its representatives adopted by the town of Wrentham on June 5, 1776, are of such a character as to lead a descendant of one of the Town Fathers of Wrentham, to publish them in May, 1909, in the *New York Evening Post* with the fanciful claim that they constitute a "Declaration of Independence that antedates the immortal document of July, 1776."

At a Town Meeting in Boston held on May 23, 1776, an election of Representatives to the General Court was held at which 272 votes were cast. A Moderator was then chosen by the Inhabitants "in order that the town may proceed in transacting the other affairs mentioned in the Warrant." The Meeting adjourned till the afternoon, when it was voted unanimously:

"That if the Hon^ble^ Continental Congress should for the Safety of the Colonies, declare them Independent of the Kingdom of Great Britain, they the Inhabitants, will solemnly engage, with their Lives and Fortunes to support them in the Measure."

On May 30, a committee chosen on the twenty-third to draft instructions made a report to the Town Meeting which "Passed in the Affirmative unanimously." The number who voted is not stated. The Instructions (whose character is indicated by the following extracts) are found in the Town Records, but not in the State Archives.

Instructions to the Representatives of the Town of Boston.

"*Gentlemen:*

"At a time when, in all Probability, the whole United Colonies of America are upon the Verge of a glorious Revolution, & when, consequently, the most important Questions that ever were agitated by the Representative Body of this Colony, touching its internal Police, will demand your Attention; your Constituents think it necessary to instruct you, in several Matters, what Part to act, that the Path of Your Duty may be plain before you.

"We have seen the humble Petitions of those Colonies to the King of Great Britain repeatedly rejected with Disdain. For the Prayer of Peace he hath tendered the Sword;—for Liberty, Chains,—for Safety, Death. He has licensed the Instruments of his hostile Oppressions to rob us of our Property, to burn our Houses, & to spill our Blood—He has invited every barbarous Nation, whom he could hope to influence to assist him in prosecuting those inhumane Purposes. The Prince, therefore, in Support of whose Crown & Dignity, not many years since, we would most cheerfully have expended both Life & Fortune, we are now constrained to consider as the worst of Tyrants; Loyalty to him is now Treason to our Country: . . .

"We think it absolutely impracticable for those Colonies to be ever again subject to, or dependent upon Great Britain, without endangering the very Existence of the State:—The Inhabitants of this Town therefore, unanimously instruct & direct you, that, at the Approaching Session of the General Assembly, you use your Endeavors, that the Delegates of this Colony, at the Congress, be advised, that in Case the Congress should think it necessary for the Safety of the United Colonies, to declare themselves independent of Great Britain, the Inhabitants of this Colony, with their Lives & the Remnant of their Fortunes, will most cheerfully support them in the measure."

The second referendum of 1776 was embodied in a Resolve of the House of Representatives (apparently the Resolve was

not laid before the Council), passed September 17, in which the "Male Inhabitants of each Town being free and Twenty-One Years of Age or upwards," were asked whether they would "give their consent that the present House of Representatives and the Council in One Body with the House and by equal Vote shall agree on and enact such a Constitution and Form of Government as they shall judge will be most conducive to the Safety, Peace and Happiness of this State in all after and successive Generations, and will direct that the same be made public for the Inspection and Perusal of the Inhabitants, before the Ratification thereof by the Assembly?"

Returns from 98 towns are extant,—showing that 72 towns approved and 26 towns disapproved of the proposal. It would appear that less than 40 per cent. of the towns made returns. The town of Boston on October 11 voted unanimously against the question. The number of votes cast does not appear.

On May 5, 1777, the House of Representatives passed a Resolve to recommend the several towns to instruct their Representatives to act with the Council in forming a Constitution of Government.

On May 22, the Town of Boston voted not to instruct their representatives "to form a plan for a new Government." The size of the vote is not stated, but earlier in the day 523 votes were cast at an election of Representatives. On May 26, the Town adopted instructions in which their Representatives were "directed by a unanimous vote in a full meeting, on no Terms to consent" to the General Court's forming a new Constitution. The Instructions intimate that "This matter at a suitable time will properly come before the people at large to delegate a *Select Number for that purpose, and that alone.*"

Apparently a sufficient number of towns agreed to the proposal embodied in the Resolve of the 5th of May, 1777, since on June 17 the Assembly and the Council resolved to act as a Convention, and their plan of a Form of Government was finally ordered printed on December 11.

In accordance with a Resolve of March 4, 1778, copies of the Constitution of 1778, so called, were submitted to the voters

On May 30, a committee chosen on the twenty-third to draft instructions made a report to the Town Meeting which "Passed in the Affirmative unanimously." The number who voted is not stated. The Instructions (whose character is indicated by the following extracts) are found in the Town Records, but not in the State Archives.

Instructions to the Representatives of the Town of Boston.

"*Gentlemen:*

"At a time when, in all Probability, the whole United Colonies of America are upon the Verge of a glorious Revolution, & when, consequently, the most important Questions that ever were agitated by the Representative Body of this Colony, touching its internal Police, will demand your Attention; your Constituents think it necessary to instruct you, in several Matters, what Part to act, that the Path of Your Duty may be plain before you.

"We have seen the humble Petitions of those Colonies to the King of Great Britain repeatedly rejected with Disdain. For the Prayer of Peace he hath tendered the Sword;—for Liberty, Chains,—for Safety, Death. He has licensed the Instruments of his hostile Oppressions to rob us of our Property, to burn our Houses, & to spill our Blood—He has invited every barbarous Nation, whom he could hope to influence to assist him in prosecuting those inhumane Purposes. The Prince, therefore, in Support of whose Crown & Dignity, not many years since, we would most cheerfully have expended both Life & Fortune, we are now constrained to consider as the worst of Tyrants; Loyalty to him is now Treason to our Country: . . .

"We think it absolutely impracticable for those Colonies to be ever again subject to, or dependent upon Great Britain, without endangering the very Existence of the State:—The Inhabitants of this Town therefore, unanimously instruct & direct you, that, at the Approaching Session of the General Assembly, you use your Endeavors, that the Delegates of this Colony, at the Congress, be advised, that in Case the Congress should think it necessary for the Safety of the United Colonies, to declare themselves independent of Great Britain, the Inhabitants of this Colony, with their Lives & the Remnant of their Fortunes, will most cheerfully support them in the measure."

The second referendum of 1776 was embodied in a Resolve of the House of Representatives (apparently the Resolve was

not laid before the Council), passed September 17, in which the "Male Inhabitants of each Town being free and Twenty-One Years of Age or upwards," were asked whether they would "give their consent that the present House of Representatives and the Council in One Body with the House and by equal Vote shall agree on and enact such a Constitution and Form of Government as they shall judge will be most conducive to the Safety, Peace and Happiness of this State in all after and successive Generations, and will direct that the same be made public for the Inspection and Perusal of the Inhabitants, before the Ratification thereof by the Assembly?"

Returns from 98 towns are extant,—showing that 72 towns approved and 26 towns disapproved of the proposal. It would appear that less than 40 per cent. of the towns made returns. The town of Boston on October 11 voted unanimously against the question. The number of votes cast does not appear.

On May 5, 1777, the House of Representatives passed a Resolve to recommend the several towns to instruct their Representatives to act with the Council in forming a Constitution of Government.

On May 22, the Town of Boston voted not to instruct their representatives "to form a plan for a new Government." The size of the vote is not stated, but earlier in the day 523 votes were cast at an election of Representatives. On May 26, the Town adopted instructions in which their Representatives were "directed by a unanimous vote in a full meeting, on no Terms to consent" to the General Court's forming a new Constitution. The Instructions intimate that "This matter at a suitable time will properly come before the people at large to delegate a *Select Number for that purpose, and that alone.*"

Apparently a sufficient number of towns agreed to the proposal embodied in the Resolve of the 5th of May, 1777, since on June 17 the Assembly and the Council resolved to act as a Convention, and their plan of a Form of Government was finally ordered printed on December 11.

In accordance with a Resolve of March 4, 1778, copies of the Constitution of 1778, so called, were submitted to the voters

of the State. The Selectmen were directed to call special meetings on or before May 15, to consider the proposed Constitution and to make returns showing the number of votes cast for and against it.

It would appear that no official statement of the returns has ever been published. We venture to give the following tentative figures, subject to further investigation. From manuscript returns it appears that 151 towns in Massachusetts and 20 in Maine, or 171 towns in all, made returns. It is stated in the Works of John Adams that 120 towns did not vote and that only about 12,000 voters went to the polls. Our notes account for 112 towns that made no returns; and our tentative totals show that 140 towns, 125 in Massachusetts and 15 in Maine, voted against ratification; while 31 towns, 26 in Massachusetts and 5 in Maine, voted for it. It appears that some 12,785 votes were cast upon the referendum, of which 10,740 were nays and 2,045 were yeas. These figures correspond fairly closely with the statement of various writers who say that the Constitution was rejected by a vote of five to one. That no returns can be found for 39 per cent. of the towns is worthy of note.

The Boston Town Meeting voted unanimously on May 25, 968 votes being cast, against ratification of the Constitution, chiefly because it had not been framed by a convention chosen especially for the purpose by the people, and furthermore because it was not prefaced by a bill of rights.

There is reason to believe that a second referendum was submitted to the Towns of Massachusetts in 1778, in which their opinion of the proposed Articles of Confederation of the United States was asked. It was ordered by the House of Representatives on January 19, 1778:

"That the several members of the House (who are not impowered to act upon the proposed Articles of Confederation of the United States) be directed immediately to write to the Selectmen of their respective Towns desiring them forthwith to call a Meeting of their Inhabitants to Impower their Representatives to act upon the proposed Articles of Confederation aforesaid."

On March 10, the Assembly voted to approve the proposed

Articles of Confederation "as well calculated to secure the Freedom, Sovereignty and Independence of the United States," and to instruct the Delegates of Massachusetts in the Continental Congress "to subscribe said articles of Confederation and perpetual union as they were recommended by Congress," on certain conditions that need not be detailed here.

The records of the General Court do not enable one to guess how many towns acted upon the Order of January 19. However, the Town Records of Boston show that on January 21, 1778, that Town voted unanimously to instruct "the Representatives of the Town to give their Votes in the General Assembly that the Delegates of this State may be authorized to ratify the said Articles of Confederation in order that the same may become conclusive."

The House of Representatives resolved on February 20, 1779, to put two questions to the voters of the State as follows:

First: Whether they choose at this time to have a New Constitution or Form of Government made?

Second: Whether they will impower their Representatives for the next year to vote for the calling of a State Convention for the sole purpose of forming a new Constitution?

On May 10 the Boston Town Meeting voted in the affirmative on both questions. The vote on the first question was 351 yeas to 0 nays. The vote on the second question, which was considered at an adjourned meeting, is not stated in the record. Twelve delegates from Boston to the convention were chosen on August 16 and 17.

The House of Representatives, in a Resolve dated June 21, 1779, recommended to the Towns that they choose delegates to a Constitutional Convention to meet in September. In this Resolve it is set forth that returns on the question of February 20, had been received from more than two thirds of the Towns and that a large majority of the Inhabitants of such towns had voted in the affirmative.

The Convention met at Cambridge September 1, and drew up a Form of Government which by a Resolve, approved by the Convention on March 2, 1780, was submitted to the People.

On June 15, 1780, the Convention resolved "That the people

of Massachusetts have accepted the Constitution as it stands, in the printed form submitted to their revision." On June 16, the Convention dissolved. No official statement can be found as to the whole number of votes for and against the Constitution. Certain schedules summarizing the returns from the Towns, that are alluded to in the Proceedings of the Convention of 1779–1780, have disappeared. Such returns as are extant appear to be incomplete. It seems probable that at least 13,000 votes, 12,000 yeas and 1,000 nays, were cast on the acceptance of Article I of the Bill of Rights.

The Boston Town Meeting having considered the proposed Constitution paragraph by paragraph on May 3 and May 4, 1780, voted on May 8 to accept the Constitution as a whole ("except the 3d Article of the Bill of Rights and the 2d Article of the 1st Chapter relative to the mode of Electing Senators") by a vote of 886 yeas to 1 nay. Two days were then devoted to the Third Article of the Bill of Rights, which being amended was finally accepted by a vote of 420 yeas to 140 nays. The article in question authorized and empowered the Legislature: (1) to require the Towns to maintain at their own expense public worship and public Protestant teachers of piety, religion and morality; and (2) to require attendance of all subjects upon the instructions of such teachers.

On September 4, 1780, the first State election under the new Constitution was held. There were 12,281 votes cast for Governor, 600 in Maine, 11,681 in Massachusetts. Maine remained a part of Massachusetts till 1820. John Hancock was elected Governor, receiving 11,207 votes, or 91.3 per cent. of the total vote for Governor. James Bowdoin, his principal competitor, received 1,033 votes. On October 25, 1780, the first General Court of the Commonwealth of Massachusetts met at the State House, in Boston.

When we remember that at the election of 1780 the people of Massachusetts were free for the first time since 1689 to elect their Governor, the total vote for Governor seems a light one; particularly as the vote on the acceptance of the Constitution of 1780 appears to have exceeded 13,000. Another notable feature of the vote for Governor in 1780 was the failure of 71 towns, *i. e.*, 24 per cent. of 297 towns,

to make return of any vote for Governor. Some 76 towns, of which 42 were in Massachusetts, appear not to have made return of any vote regarding the Constitution of 1780!

The Sons of the Revolution will do well to note that the voting habits of their Fathers were rather peculiar.

In Boston, on September 4, 1780, the votes cast for Governor amounted to 923 (or 36 more than were cast for the Constitution), against 339 for Lieutenant Governor, while the highest vote cast for a Senator was 275. At an election of Representatives on October 11, 1780, the votes for seven of them ranged between 150 and 181 in a total of 185 present and voting.

The existence of a relatively large stay-at-home vote in Massachusetts at an early date is indicated by a total vote for Governor of 24,588 in 1787 against a total vote of 8,231 in 1786.

In 1786 James Bowdoin was re-elected Governor, having 6,001 votes, or 73 per cent. of the total vote. In 1787, Bowdoin, whose course in suppressing Shays's Rebellion had aroused popular resentment, received only 5,395, or 22 per cent. of the vote for Governor, while his opponent, John Hancock, received 18,459 votes, or 75 per cent. of that vote. In 1787 three fourths of the House of Representatives and two thirds of the Senate and Council were new members and belonged to the "Opposition" against Bowdoin. Verily, the Fathers did vote when they were minded to!

The Constitution of 1780 provided for "collecting the sentiments" of the qualified voters of the State in 1795 on "the necessity or expediency of revising the Constitution, in order to amendments." Accordingly the Legislature referred the question to the voters in special meetings to be convened on May 6, 1795.

The total vote of the State amounted to 16,324, or 7,999 for to 8,325 against revision. The vote on the referendum equalled 92 per cent. of the vote for Governor, which was 17,710. The vote against revision amounted to 50.9 per cent. of the total vote. The vote in Boston was 78 for and 49 against revision. A month before, on April 6th, the vote cast for Governor was 2,029, and the vote for Lieutenant Governor 2,048.

The period 1776–1780 is quite unparalled in the annals of Massachusetts as regards the amount of consideration which the voters were formally called upon by the Legislature to devote to constitutional questions. In each of the five years the towns were called upon to meet to consider such questions, and in 1776 and 1778 they were called on to do so twice. The referenda relating to the Articles of Confederation and to the Constitutions of 1778 and 1780 were what may be termed blanket referenda, inasmuch as they each embodied a series of topics, *e. g.*, the Constitution of 1780 comprised a preamble, a bill of rights including 30 articles, and the frame of government including 70 articles. From this point of view it is fair to say that in no other period of five years have the referenda embodied so many and such varied questions, although the questions demanding yes or no answers in certain periods appear at first sight not to warrant such a statement. For instance, 14 proposed amendments were voted upon on April 9, 1821.

The people of Massachusetts, having secured a constitution to their liking, were content to leave it unchanged for forty years. Since 1820, one article in the Bill of Rights and 30 articles in the Constitution have been altered through the ratification of 37 amendments. In altering the Constitution the people have acted with much discrimination and have shown their dislike of wholesale or headlong changes.

But two conventions to revise the Constitution have been held. The first, held in 1821, proposed fourteen distinct amendments of which only nine were ratified, although several of the rejected amendments were accepted in later years.

It should be remembered that all constitutional referenda submitted to the people since 1821 have been previously passed by two successive General Courts, in conformity with Article IX of Amendments to the Constitution, which was adopted in 1821. For the adoption of an amendment of the constitution by the General Court a majority vote suffices in the Senate, while a two-thirds majority is requisite in the House of Representatives.

The Second Constitutional Convention, that of 1853, submitted eight "propositions" to be answered by Yes or No.

That numbered "one" was a blanket referendum, covering what was in effect a revised constitution embodying many radical changes; the other seven were categorical propositions. However, all of the eight were rejected.

The impolicy of asking the voters to say yes or no to a complicated proposition involving several unrelated questions, as in the case of "Proposition One of 1853," seems to have been recognized by the Massachusetts Legislature. At any rate since 1853 it has refrained from submitting blanket or alternative referenda to the voters of the State. But its course has been less consistent in submitting special acts to individual cities for their approval or disapproval, many revised charters having been submitted *en bloc.*

In 1851, however, an act providing (1) for the election of one alderman from each ward instead of twelve at large, and (2) for the election of two assistant assessors from each ward was submitted to the voters of Boston. The act was rejected by a vote of 6,966 nays to 4,519 yeas.

In 1852, an act embodying four distinct questions to be voted on separately was submitted to the voters of Boston. Questions 1 and 2 were exactly the same as those sumbitted in the act of 1851 and were again rejected; the vote on "Question 1" being 5,070 nays to 4,903 yeas, and that on "Question 2" being 5,102 nays to 4,866 yeas. But "Question 3" was approved by a vote of 9,784 yeas to 155 nays, and "Question 4" by a vote of 9,706 yeas to 147 nays. If the voters in 1852 had been restricted to voting yea or nay on the act as a whole, it seems altogether probable, judging from their action in 1851, that they would have rejected the act of 1852 *in toto.*

As the best available means of indicating the degree of interest shown by the voters of Massachusetts and of Boston in the referenda submitted since the election of the first governor of the State, we have prepared Table I which shows—Firstly: (1) the character of the 59 referenda submitted to the voters of Massachusetts in the period, 1780–1907; (2) the number of votes cast for and against each referendum, and (3) the total vote cast for Governor in each year when a referendum was submitted; secondly, the same facts for Boston as are set forth for the State; and thirdly: A—the per cent.

of the vote on each referendum to the vote for Governor, in each year covered by the table: (1) in the State, (2) in Boston, and (3) in the State outside of Boston; and B—the per cent. of the major vote on each referendum to the total vote cast on each referendum: (1) in the State, (2) in Boston, and (3) in in the State outside of Boston.

At first sight, the most obvious fact that is disclosed by inspection of this table is the wide, not to say violent, fluctuations in the votes cast on the various referenda, and in the corresponding degrees of interest expressed by the per cents, given under A and B, respectively. But on closer inspection, if due consideration be given to the character of the individual referenda, it becomes fairly clear that the voters manifested both sagacity and discrimination in voting with most emphasis on the most important of the questions to be considered.

The per cent. of vote on referendum to vote for Governor affords a measure of the interest in referenda as compared with that in the contest for Governor. A few of the occasions when a relatively large vote was evoked in the State by referenda are noted below.

In 1780, on approval or disapproval of Article I of the Bill of Rights, the per cent. was 105.9 of the vote for Governor.

In 1853, when all of the eight "propositions" recommended by the convention of that year were rejected, the per cents. ranged between 101.8 on accepting the revised Bill of Rights and Constitution to 100.8 on enlarging the powers of juries in criminal causes. In 1851, on the question of holding a constitutional convention (which was negatived), the per cent. was 92.4; and in 1852, when it was voted to hold one, the per cent. was 90.7, as compared with 34.4 in 1820 and 92.2 in 1795, when the same questions were up.

In 1895, on the expediency of granting municipal suffrage to women (which was negatived), the per cent. was 83.5.

In 1885, on the question of forbidding the manufacure of intoxicating drinks (settled in the negative), the per cent. was 82.2.

The lowest per cents. in this class are found in 1860 on the question of establishing methods for filling vacancies (1) in the Senate and (2) in the Council, the per cent. being 3.3 in

TABLE I.

VOTES IN MASSACHUSETTS AND BOSTON ON STATE REFERENDA AND FOR GOVERNOR, 1780-1907.

Serial Number	Date	Object of Referendum	Vote of State on Referendum			Vote of State for Governor	Vote of Boston on Referendum			Vote of Boston for Governor	Percentages						Result in State	Serial Number
											A.—Vote on Referendum to Vote for Governor			B.—Majority Vote on Referendum to Total Vote on Same				
			For	Against	Total		For	Against	Total		In State	In Boston	Outside Boston	In State	In Boston	Outside Boston		
1..	1780.....	Adoption of the Constitution.....	12,000	1,000	13,000	12,281	887	-	887	923	105.9	96.1	106.6	92.3	100.0	91.7	Accepted.....	...1
2..	1795. May 6,	Expediency of Revising the Constitution.....	7,999	8,325	16,324	17,710	78	49	127	2,029	*92.2	6.2	*103.3	*51.0	61.4	*51.1	Rejected.....	...2
3..	1820. Aug. 21,	†Whether a Constitutional Convention Shall Be Held.....	11,756	6,593	18,349	53,297	1,029	50	1,079	5,209	34.4	20.7	35.9	64.1	95.4	63.1	Accepted.....	...3
4..	1821. April 9,	To Abolish Support, by the Towns, of Protestant Ministers and Required Attendance upon the Instructions of the Clergy.....	11,065	19,547	30,612	49,086	1,768	888	2,656	4,399	*62.4	60.4	*62.6	*63.9	66.6	*66.7	Rejected.....	...4
5..	1821. April 9,	To Change the Political Year and Date of State Election.....	14,164	16,728	30,892	49,086	1,515	1,133	2,648	4,399	*62.9	60.2	*63.2	*54.1	57.2	*55.2	Rejected.....	...5
6..	1821. April 9,	To Forbid Bills Unsigned after Adjournment of General Court to Become Laws.....	17,949	10,709	28,658	49,086	2,553	99	2,652	4,399	58.4	60.3	58.2	62.6	96.3	59.2	Article I.....	...6
7..	1821. April 9,	To Empower the Legislature to Grant City Charters.....	14,368	14,306	28,674	49,086	2,462	185	2,647	4,399	58.4	60.2	*58.2	59.1	93.0	*54.3	Article II.....	...7
8..	1821. April 9,	To Change Method of Electing Senators, Representatives and Councillors.....	9,904	20,729	30,633	49,086	1,642	1,006	2,648	4,399	*62.4	60.2	*62.6	*67.7	62.0	*70.5	Rejected.....	...8
9..	1821. April 9,	To Abolish Property Qualification for Voters..	18,702	10,150	28,852	49,086	2,526	118	2,644	4,399	58.8	60.1	58.7	64.8	95.5	61.7	Article III.....	...9
10..	1821. April 9,	To Authorize Appointment of Notaries Public by the Governor.....	14,174	13,517	27,691	49,086	1,826	832	2,658	4,399	56.4	60.4	*56.0	51.2	68.7	*50.7	Article IV.....	...10
11..	1821. April 9,	To Allow All Members of Militia to Vote for their Captains and Subalterns.....	22,726	6,444	29,170	49,086	2,410	238	2,648	4,399	59.4	60 2	59.4	77.9	91.0	76.6	Article V.....	...11
12..	1821. April 9,	To Empower Governor to Remove Justices of the Peace and to Prohibit Referring Certain Questions to Supreme Court.....	12,471	14,518	26,989	49,086	1,771	888	2,659	4,399	*55.0	60.4	*54.5	*53.8	66.6	*56.0	Rejected.....	...12
13..	1821. April 9,	To Allow Overseers of Harvard College Free Choice in Election of Ministers to their Board.....	8,020	20,123	28,143	49,086	1,419	1,230	2,649	4,399	*57.3	60.2	*57.1	*71.5	53.6	*74.1	Rejected.....	...13
14..	1821. April 9,	To Simplify the Oath of Allegiance.....	17,552	9,244	26,796	49,086	2,504	129	2,633	4,399	54.6	59.9	54.1	65.5	95.1	62.3	Article VI.....	...14
15..	1821. April 9,	To Require No Other Oath than that of Allegiance of Any Civil or Military Officer.....	13,782	12,480	26,262	49,086	2,442	197	2,639	4,399	53.5	60.0	*52.9	52.5	92.5	*53.0	Article VII.....	...15
16..	1821. April 9,	To Make Judges (except of Court of Sessions) and Officials of United States (except Postmasters) Ineligible to State Offices.....	18,048	8,412	26,460	49,086	2,558	85	2,643	4,399	53.9	60.1	53.3	68.2	96.8	65.0	Article VIII.....	...16
17..	1821. April 9,	To Provide that Proposed Amendments of Constitution must be Passed by Two Successive Legislatures before Submission to the People.	16,325	11,661	27,986	49,086	2,458	194	2,652	4,399	57.0	60.3	56.7	58.3	92.7	54.7	Article IX.....	...17
18..	1831. May 11,	To Change the Political Year and Date of State Election.....	19,434	6,277	25,711	48,895	1,115	1,509	2,624	4,255	52.6	*61.7	51.7	75.6	*57.5	79.3	Article X.....	18
19..	1833. Nov. 11,	To Abolish Support by Towns of Ministers and the Required Attendance upon the Instructions of Clergymen.....	32,354	3,272	35,626	62,474	2,007	346	2,353	5,686	57.0	41.4	58.6	90.8	85.3	91.2	Article XI.....	...19
20..	1836. Nov 14,	To Change the Basis of Apportioning Members of the General Court.....	34,719	11,754	46,473	78,389	2,957	2,666	5,623	7,628	59.3	73.7	57.7	74.7	52.6	77.8	Article XII.....	...20
21..	1840. Mar. 10,	To Require a Decennial Census of Inhabitants for Determining Apportionment of Senators and Representatives.....	24,884	4,912	29,796	127,315	1,139	151	1,290	11,589	23.4	11.1	24.6	83.5	88.3	83.3	Article XIII.....	...21
22..	1851. Nov. 10,	On Expediency of Holding a Constitutional Convention.....	60,972	65,846	126,818	137,187	3,854	7,172	11,026	12,339	*92.4	*89.4	*92.7	*51.9	*65.0	*50.7	Rejected.....	...22
23..	1852. Nov. 8,	On Expediency of Holding a Constitutional Convention.....	66,416	59,111	125,527	138,436	3,518	6,456	9,974	12,243	90.7	*81.5	91.6	52.9	*64.7	54.4	Accepted.....	...23
24..	1853. Nov. 14,	On Accepting a Revision of Bill of Rights and Constitution.....	63,222	68,150	131,372	129,010	3,248	9,033	12,281	12,492	*101.8	*98.3	102.2	*51.9	*73.5	50.4	Rejected.....	...24
25..	1853. Nov. 14,	To Enlarge the Discretion of the Courts in Granting Writs of Habeas Corpus.....	63,282	67,006	130,288	129,010	3,154	8,548	11,702	12,492	*101.0	*93.7	101.8	*51.4	*73.1	50.7	Rejected.....	...25
26..	1853. Nov. 14,	To Enlarge the Jurisdiction of Juries in Criminal Causes.....	61,699	68,382	130,081	129,010	3,084	8,468	11,552	12,492	*100.8	*92.5	*101.7	*52.6	*73.3	*50.5	Rejected.....	...26
27..	1853. Nov. 14,	To Permit Claimants to Sue the State.....	63,805	66,828	130,633	129,010	3,239	8,455	11,694	12,492	*101.3	*93.6	102.1	*51.2	*72.3	50.9	Rejected.....	...27
28..	1853. Nov. 14,	To Abolish Imprisonment for Debt.....	64,015	66,432	130,447	129,010	3,248	8,340	11,588	12,492	*101.1	*92.8	102.0	*50.9	*72.0	51.1	Rejected.....	...28
29..	1853. Nov. 14,	To Forbid Support of Sectarian Schools from Public Moneys.....	65,111	65,512	130,623	129,010	3,562	8,234	11,796	12,492	*101.3	*94.4	102.0	*50.2	*69.8	51.8	Rejected.....	...29
30..	1853. Nov. 14,	To Forbid the Creation of Corporations by Special Acts of the Legislature.....	63,246	67,011	130,257	129,010	3,178	8,322	11,500	12,492	*101.0	*92.1	101.9	*51.4	*72.4	50.6	Rejected.....	...30
31..	1853. Nov. 14,	To Forbid the Incorporation of Banks by Special Acts of the Legislature.....	63,412	67,109	130,521	129,010	3,210	8,388	11,598	12,492	*101.2	*92.8	102.1	*51.4	*72.3	50.6	Rejected.....	...31
32..	1855. May 23,	To Provide for the Election of Civil Officers by a Plurality of the Votes Cast.....	14,862	5,124	19,986	136,582	2,105	510	2,615	14,335	14.6	18.2	14.2	74.4	80.5	73.4	Article XIV.....	...32
33..	1855. May 23,	To Change the Date of the Annual State Election.....	17,094	2,762	19,856	136,582	2,133	427	2,560	14,335	14.5	17.9	14.2	86.1	83.3	86.5	Article XV.....	...33
34..	1855. May 23,	To Change the Number of Councillors and Method of Election.....	14,720	4,950	19,670	136,582	1,657	843	2,500	14,335	14.4	17.4	14.0	74.8	66.3	76.1	Article XVI.....	...34
35..	1855. May 23,	To Make the Offices of Secretary, Treasurer, Auditor and Attorney General Elective by the People.....	14,500	5,210	19,710	136,582	1,600	923	2,523	14,335	14.4	17.6	14.1	73.6	63.4	75.0	Article XVII.....	...35
36..	1855. May 23,	To Forbid Expenditure of Public Moneys for the Support of Sectarian Schools.....	17,331	2,541	20,072	136,582	2,192	449	2,641	14,335	14.7	18.4	14.3	87.3	83.0	88.0	Article XVIII.....	...36
37..	1855. May 23,	To Require the Legislature to Prescribe for the Election of County Officers by the People of the Counties.....	13,880	5,724	19,604	136,582	1,420	1,016	2,436	14,335	14.4	17.0	14.0	70.8	58.3	72.6	Article XIX.....	...37
38..	1857. May 1,	To Restrict the Right to Vote or to Hold Office to Persons Able to Read and Write.....	23,833	13,746	37,579	130,536	2,855	2,027	4,882	13,448	28.8	36.3	27.9	63.4	58.5	64.2	Article XX.....	...38
39..	1857. May 1,	To Change the Time of Decennial Census and																

15..	1821. April 9,	To Require No Other Oath than that of Allegiance of Any Civil or Military Officer	13,782	12,480	26,262	49,086	2,442	197	2,639	4,399	53.5	60.0	*52.9	59.5	92.5	*52.0	Article VII.	..15
16..	1821. April 9,	To Make Judges (except of Court of Sessions) and Officials of United States (except Postmasters) Ineligible to State Offices	18,048	8,412	26,460	49,086	2,558	85	2,643	4,399	53.9	60.1	53.3	68.2	96.8	65.0	Article VIII.	..16
17..	1821. April 9,	To Provide that Proposed Amendments of Constitution must be Passed by Two Successive Legislatures before Submission to the People.	16,325	11,661	27,986	49,086	2,458	194	2,652	4,399	57.0	60.3	56.7	58.3	92.7	54.7	Article IX.	..17
18..	1831. May 11,	To Change the Political Year and Date of State Election	19,434	6,277	25,711	48,895	1,115	1,509	2,624	4,255	52.6	*61.7	51.7	75.6	*57.5	79.3	Article X.	18
19..	1833. Nov. 11,	To Abolish Support by Towns of Ministers and the Required Attendance upon the Instructions of Clergymen	32,354	3,272	35,626	62,474	2,007	346	2,353	5,686	57.0	41.4	58.6	90.8	85.3	91.2	Article XI.	..19
20..	1836. Nov 14,	To Change the Basis of Apportioning Members of the General Court	34,719	11,754	46,473	78,389	2,957	2,666	5,623	7,628	59.3	73.7	57.7	74.7	82.6	77.8	Article XII.	..20
21..	1840. Mar. 10,	To Require a Decennial Census of Inhabitants for Determining Apportionment of Senators and Representatives	24,884	4,912	29,796	127,315	1,139	151	1,290	11,589	23.4	11.1	24.6	83.5	88.3	83.3	Article XIII.	..21
22..	1851. Nov. 10,	On Expediency of Holding a Constitutional Convention	60,972	65,846	126,818	137,187	3,854	7,172	11,026	12,339	*92.4	*89.4	*92.7	*51.9	*65.0	*50.7	Rejected.	..22
23..	1852. Nov. 8,	On Expediency of Holding a Constitutional Convention	66,416	59,111	125,527	138,436	3,518	6,456	9,974	12,243	90.7	*81.5	91.6	52.9	*64.7	54.4	Accepted.	..23
24..	1853. Nov. 14,	On Accepting a Revision of Bill of Rights and Constitution	63,222	68,150	131,372	129,010	3,248	9,033	12,281	12,492	*101.8	*98.3	102.2	*51.9	*73.5	50.4	Rejected.	..24
25..	1853. Nov. 14,	To Enlarge the Discretion of the Courts in Granting Writs of Habeas Corpus	63,282	67,006	130,288	129,010	3,154	8,548	11,702	12,492	*101.0	*93.7	101.8	*51.4	*73.1	50.7	Rejected.	..25
26..	1853. Nov. 14,	To Enlarge the Jurisdiction of Juries in Criminal Causes	61,699	68,382	130,081	129,010	3,084	8,468	11,552	12,492	*100.8	*92.5	*101.7	*52.6	*73.3	*50.5	Rejected.	..26
27..	1853. Nov. 14,	To Permit Claimants to Sue the State	63,805	66,828	130,633	129,010	3,239	8,455	11,694	12,492	*101.3	*93.6	102.1	*51.2	*72.3	50.9	Rejected.	..27
28..	1853. Nov. 14,	To Abolish Imprisonment for Debt	64,015	66,432	130,447	129,010	3,248	8,340	11,588	12,492	*101.1	*92.8	102.0	*50.9	*72.0	51.1	Rejected.	..28
29..	1853. Nov. 14,	To Forbid Support of Sectarian Schools from Public Moneys	65,111	65,512	130,623	129,010	3,562	8,234	11,796	12,492	*101.3	*94.4	102.0	*50.2	*69.8	51.8	Rejected.	..29
30..	1853. Nov. 14,	To Forbid the Creation of Corporations by Special Acts of the Legislature	63,246	67,011	130,257	129,010	3,178	8,322	11,500	12,492	*101.0	*92.1	101.9	*51.4	*72.4	50.6	Rejected.	..30
31..	1853. Nov. 14,	To Forbid the Incorporation of Banks by Special Acts of the Legislature	63,412	67,109	130,521	129,010	3,210	8,388	11,598	12,492	*101.2	*92.8	102.1	*51.4	*72.3	50.6	Rejected.	..31
32..	1855. May 23,	To Provide for the Election of Civil Officers by a Plurality of the Votes Cast	14,862	5,124	19,986	136,582	2,105	510	2,615	14,335	14.6	18.2	14.2	74.4	80.5	73.4	Article XIV.	..32
33..	1855. May 23,	To Change the Date of the Annual State Election	17,094	2,762	19,856	136,582	2,133	427	2,560	14,335	14.5	17.9	14.2	86.1	83.3	86.5	Article XV.	..33
34..	1855. May 23,	To Change the Number of Councillors and Method of Election	14,720	4,950	19,670	136,582	1,657	843	2,500	14,335	14.4	17.4	14.0	74.8	66.3	76.1	Article XVI.	..34
35..	1855. May 23,	To Make the Offices of Secretary, Treasurer, Auditor and Attorney General Elective by the People	14,500	5,210	19,710	136,582	1,600	923	2,523	14,335	14.4	17.6	14.1	73.6	63.4	75.0	Article XVII.	..35
36..	1855. May 23,	To Forbid Expenditure of Public Moneys for the Support of Sectarian Schools	17,531	2,541	20,072	136,582	2,192	449	2,641	14,335	14.7	18.4	14.3	87.3	83.0	88.0	Article XVIII.	..36
37..	1855. May 23,	To Require the Legislature to Prescribe for the Election of County Officers by the People of the Counties	13,880	5,724	19,604	136,582	1,420	1,016	2,436	14,335	14.4	17.0	14.0	70.8	58.3	72.6	Article XIX.	..37
38..	1857. May 1,	To Restrict the Right to Vote or to Hold Office to Persons Able to Read and Write	23,833	13,746	37,579	130,536	2,855	2,027	4,882	13,448	28.8	36.3	27.9	63.4	58.5	64.2	Article XX.	..38
39..	1857. May 1,	To Change the Time of Decennial Census and to Make the Number of Legal Voters the Basis of Apportionment of Representatives	31,277	6,282	37,559	130,536	4,480	224	4,704	13,448	28.8	35.0	28.1	83.3	95.2	81.6	Article XXI.	..39
40..	1857. May 1,	To Base Apportionment of Senators on the Number of Legal Voters Enumerated by Decennial Census	32,971	4,342	37,313	130,536	4,473	243	4,716	13,448	28.6	35.1	27.8	88.4	94.9	87.4	Article XXII.	..40
41..	1859. May 9,	To Forbid Naturalized Citizens to Vote or Hold Office unless Resident in United States for Two Years after their Naturalization	20,753	15,129	35,882	109,051	3,516	2,496	6,012	10,916	32.9	55.1	30.4	57.8	58.5	57.7	Article XXIII.	..41
42..	1860. May 17,	To Authorize the Senate to Order Elections to Fill Vacancies in the Senate	4,422	1,205	5,627	169,609	420	74	494	20,271	3.3	2.4	3.4	78.6	85.0	78.0	Article XXIV.	..42
43..	1860. May 17,	To Provide a Method for Filling Vacancies in the Council	4,103	1,531	5,634	169,609	391	103	494	20,271	3.3	2.4	3.4	72.8	79.1	72.2	Article XXV.	..43
44..	1863. April 6,	To Annul the Twenty-third Amendment. (See 41 above)	10,035	6,082	16,117	99,767	1,046	732	1,778	10,249	16.1	17.3	16.0	62.3	58.8	62.7	Article XXVI.	..44
45..	1877. Nov. 6,	To Annul Provision that No Member of Faculty of Harvard College Shall Hold a Seat in General Court	23,839	6,505	30,344	184,454	3,950	1,079	5,029	36,550	16.5	13.8	17.1	78.6	78.6	78.6	Article XXVII.	..45
46..	1881. Nov. 8,	To Prevent Disfranchisement of Pauper Soldiers and Sailors	30,245	20,184	50,429	157,802	5,782	3,019	8,801	29,218	31.9	30.1	32.4	60.0	65.7	58.8	Article XXVIII.	..46
47..	1885. Nov. 3,	To Provide for Voting by Precincts in Towns	43,598	8,673	52,271	209,668	7,731	1,089	8,820	41,683	24.9	21.2	25.9	83.4	87.6	82.6	Article XXIX.	..47
48..	1889. April 22,	To Forbid the Manufacture of Intoxicating Drinks	85,242	131,062	216,304	263,111	10,669	31,699	42,368	52,478	*82.2	*80.7	*82.6	*60.6	*74.8	*57.1	Rejected.	..48
49..	1890. Nov. 4,	To Forbid Disqualification of Voters, for Change of Residence, within Six Months of Such Change	97,177	44,686	141,863	285,526	17,905	9,531	27,436	52,954	49.7	51.8	49.2	68.5	65.3	69.3	Article XXX.	..49
50..	1890. Nov. 4,	To Relieve Soldiers and Sailors Receiving Public Aid from Designation of "Paupers"	100,109	27,021	127,130	285,526	18,865	5,543	24,408	52,954	44.5	46.1	44.2	78.7	77.3	79.1	Article XXXI.	..50
51..	1891. Nov. 3,	To Abolish Payment of Poll Tax as a Prerequisite to Voting	144,931	53,554	198,485	321,650	33,490	7,170	40,660	60,995	61.7	66.7	60.6	73.0	82.4	70.6	Article XXXII.	..51
52..	1891. Nov. 3,	To Make a Majority of Each Branch of the General Court a Quorum	152,688	29,590	182,278	321,650	33,398	4,702	38,100	60,995	56.7	62.5	55.3	83.8	87.7	82.7	Article XXXIII.	..52
53..	1892. Nov. 8,	To Abolish the Property Qualification for Office of Governor	141,321	68,045	209,366	399,698	29,448	13,959	43,407	74,032	52.4	58.6	51.0	67.5	67.8	67.4	Article XXXIV.	..53
54..	1893. Nov. 7,	To Annul the Provision for Paying Mileage but Once to Members of the General Court	125,375	80,555	205,930	365,112	24,991	20,888	45,879	71,715	56.4	64.0	54.5	60.9	54.5	62.7	Article XXXV.	..54
55..	1894. Nov. 6,	To Abolish the Office of Commissioners of Insolvency	114,499	34,741	149,240	335,354	23,763	8,082	31,845	66,214	44.5	48.1	43.6	76.7	74.6	77.3	Article XXXVI.	..55
56..	1895. Nov. 5,	Expediency of Granting Municipal Suffrage to Women	86,990	186,976	273,966	328,121	15,860	42,224	58,084	66,919	*83.5	*86.8	*82.6	*68.2	*72.7	*67.1	Rejected.	..56
57..	1896. Nov. 3,	To Make Elections of Governor, Lieut.-Governor and Councilors Biennial instead of Annual	115,505	161,263	276,768	385,064	23,151	38,869	62,020	80,406	*71.9	*77.1	*70.5	*58.3	*62.7	*57.0	Rejected.	..57
58..	1896. Nov. 3,	To Make Elections of Senators and Representatives Biennial instead of Annual	105,589	156,211	261,800	385,064	21,222	38,257	59,479	80,406	*68.0	*74.0	*66.4	*59.7	*64.3	*58.3	Rejected.	..58
59..	190[illegible]. Nov. 5,	To Empower the Governor to Remove Justices of the Peace and Notaries Public	178,076	35,989	213,994	373,705	40,531	9,267	49,798	83,509	58.8	59.6	58.6	83.2	81.4	83.7	Article XXXVII.	..59

*Indicates a majority against.

† Maine became a State on March 15, 1820, hence the voters therein had no part in Massachusetts referenda after 1795.

NOTE.—The Referenda which became Amendments to the State Constitution are indicated under "Result in State."

each case. The extremely light interest in these referenda may be accounted for in part by the fact that there was a Presidential election in 1860, and that the vote for Governor which resulted in the first election of John A. Andrew was phenomenally large.

In a number of cases the major vote exceeded the minor vote by a narrow margin, as is shown by per cents given under B "In State" in the Table. Thus, the vote in 1821 to authorize the Legislature to grant city charters was only 50.1 per cent. of the total vote. In 1853, the corresponding per cent. (against abolishing imprisonment for debt) was 50.9; and that against forbidding the expenditure of public moneys for the support of sectarian schools was 50.2. It may be noted that in 1855 the last mentioned proposal was approved, when the per cent. of the major vote to the total vote on the question amounted to 87.3 in a year when the total vote on the referendum amounted to only 14.7 per cent. of the vote for Governor.

The following are instances in which the major vote greatly exceeded the minor vote: In 1780, it was 92.3 per cent. in favor of Article I of the Bill of Rights.

In 1833, the per cent. was 90.8 on changing Article III of the Bill of Rights so as to relieve the Towns from paying for the support of ministers of piety, religion, and morality. In 1821, the same proposition was rejected when the major vote was 63.9 per cent. of the whole vote.

In 1857, on the question of changing the method of apportioning senators (which was accepted) the per cent. was 88.4. In 1821 a similar proposal was rejected, the major vote being 67.7 per cent. of the total vote.

The Constitution of Massachusetts adopted by a referendum in 1780 was a remarkable instrument in many ways. Not only did it express the wish and will of the people more fully and explicitly than any constitution or charter then possessed by any State; but it was the first constitution to be framed by a convention chosen expressly by the people for that purpose, and then ratified by the people in their town meetings, after deliberate discussion. This constitution has been characterized "as the most perfect expression of the American theory as understood at the close of the Revolution." It served as the

model for the Federal Constitution of 1787 and later for the conventions called to revise the first State constitutions several of which had been hurriedly adopted by a State Assembly in 1776 and 1778.

However, the point to be most particularly emphasized here is that the Constitution of 1780 marked the triumph of the advocates of popular sovereignty over the party of prerogative and privilege that had striven for a century and a half to keep a preponderant place for the Magistrates in the government of the Colony, the Province, and the State of Massachusetts.

To the writer it appears that the germ of the Constitution of Massachusetts is to be found in the vaguely phrased provisions of the Charter granted by Charles I, in 1629, to the Governor and Company of Massachusetts Bay, because upon the disputed meaning of those provisions the freeman of the Colony based their insistent demands for the recognition and exercise of their charter rights. The forces which served to quicken that germ and the circumstances whereby its growth and development were conditioned, till the Commonwealth of Massachusetts was evolved from the original quasi-trading corporation, deserve fuller and more critical study than they have received as yet from the devotees of modern political science. A clear, complete and convincing story of the origin and development of our frame of government is still to seek. When that story shall be adequately told, the part played by the constitutional referendum as an organ for giving expression to the mind and will of the people will doubtless be assigned a more prominent and important place than has been accorded it hitherto.

In the foregoing pages 74 referenda have been cited. Fifty-nine of them, relating to the adoption or amendment of the Constitution of 1780, are included in Table I. The nature of the remaining 15, is indicated in the following summary of the questions referred to the people in the period 1641–1779.

SUMMARY OF REFERENDA IN MASSACHUSETTS, 1641-1780.

Year.	Nature of Question Submitted.	Accepted.	Rejected.	Total.
1639	Approval of the Body of Liberties	1	-	1
1643	Approval of Articles of New England Confederation	1	-	1
1644	Election of Deputies by Counties instead of Towns	-	1	1
1644	Providing Compensation for Magistrates and Deputies	?	?	1
1647	Reducing Number of Deputies to One from Each Town	-	1	1
1689	Resumption of Charter Revoked in 1684	1	-	1
1689	Further Consideration of the Above Question	1	-	1
1765	Compensation for Damages Done by the Mob in Boston	1	-	1
1776	Approval of Declaration of Independence	1	-	1
1776	Permitting Council and House of Representatives to Frame a Constitution	1	-	1
1777	Instructing Representatives to Act with Council in Framing a Constitution	1	-	1
1778	Approval of Articles of Confederation of the United States	-	1	1
1778	Ratification of Constitution of 1778	-	1	1
1779	To Determine whether the People Desire a New Constitution	1	-	1
1779	Shall the Representatives call a Constitutional Convention?	1	-	1
		11	3	15

The following review of the principal changes wrought in the Constitution of 1780 by the amendments adopted since 1820 may help us towards reaching a just estimate of the efficacy of the constitutional referendum as a means of ascertaining the sentiments of the people of Massachusetts touching the organic law of their Commonwealth.

As a whole the Constitution has undergone no very radical changes either in its essence or structure in one hundred and thirty years; although religious and property tests have been abolished, manhood suffrage established, and the sphere of the electorate notably enlarged.

Public Support of Clergy.

As is well known, the original draft both of the Bill of Rights and of the Frame of Government—all but the third Article of the Bill of Rights—was written by John Adams. That article as originally reported was entirely erased by the

convention, and "after several days spent in discussion . . . the subject was recommitted to a committee of seven with the Reverend Mr. Alden, as the Chairman, who reported the substitute which was finally adopted, in an amended form, and after long debates." (Works of John Adams, Vol. IV, page 222.)

The article, as recommended by the convention, met with much opposition among the people but was ratified by a sufficient vote; whose size cannot be accurately stated, owing to the incomplete and defective character of the returns that have come down to us. Attention was called above on page 74 to the prolonged debate and considerable opposition evoked by that article in the Boston Town Meeting in May, 1780.

Article III authorized and required the Legislature "to require the several towns, etc., to make suitable provision, at their own expense, for the institution of the public worship of God, and for the special support and maintenance of public Protestant teachers of piety, religion, and morality, in all cases where such provision shall not be made voluntarily. And the people of this Commonwealth . . . do invest their Legislature with authority to enjoin upon all the subjects an attendance upon the instruction of such public teachers aforesaid, at stated times and seasons, if there be any on whose instructions they can conscientiously and conveniently attend."

Number One of the proposed Amendments submitted to the people on April 9, 1821, was intended to do away with the provisions of Article III. (See Number 4, Table I.) It was rejected by a vote of 19,547, to 11,065 in the State, while Boston, gave 1,768 votes for the amendment to 888 against it.

In 1833, the present Article XI of Amendments, which contains no provision to authorize the public support of any clergy or to require attendance upon their instructions, but which does expressly forbid the "subordination of any sect or denomination to another," was substituted, for Article III, Bill of Rights. The vote for the Amendment was 32,354 to 3,272 against, in the State, and in Boston, 2,007, for to 346 against (see Number 19, Table I).

We have in the votes on these referenda relating to Article III of the Bill of Rights notable and significant evidence of the growth of public opinion in 50 years, as affecting the people's law. In 1780, of the total vote cast in Boston on Article III, 25 per cent. only was against it. In 1821, 66.6 per cent. of the vote cast was for annulling the article; while in the rest of the State 66.7 per cent. of those who voted on the matter voted to retain the article and the public support of the Protestant Clergy. Whereas in 1833, of the vote cast on the referendum, the radical substitute for the article received, 90.8 per cent. in the State, 85.3 in Boston, and 91.2 per cent. in the State, outside of Boston.

Elective Franchise.

Under the original Constitution none but "male inhabitants twenty-one years of age and upwards, having a freehold estate within the Commonwealth of the annual income of £3, or any estate of the value of £60" were allowed to vote for governor, lieutenant governor, senators, and representatives. In 1821, by the acceptance of Article III—Amendments, the above mentioned property qualification was abolished and the right to vote at State elections was accorded "every male citizen of twenty-one years and upwards, excepting paupers and persons under guardianship . . . and who shall have paid any state or county tax assessed within two years preceding such election." This amendment received 95.5 per cent. of the vote cast on the referendum in Boston and 61.7 per cent. in the rest of the State. (See Number 9, Table I.)

In 1891, Article XXXII—Amendments, abolished the provision of Amendment III as to the payment of a tax as a prerequisite to voting. In Boston the vote on the referendum was 66.7 per cent. of the Vote for governor, and in the rest of the State, 60.6 per cent. of that vote. Of the total vote cast on the referendum, 82.4 per cent. was for it, and in the rest of the State 70.6 per cent. (See Number 51, Table I.)

In 1857, by Article XX—Amendments, the right to vote or hold office was denied to voters unable to read and write. (See Number 38, Table I.)

Article XXIII—Amendments, was adopted in 1859. It forbade the voting or holding of office by naturalized citizens unless resident in the United States for two years after naturalization. On the referendum, at a special election in May, the total vote in the State was only 32.9 per cent. of the vote cast in the following November for governor, the major vote for the amendment being 57.8 per cent. of the total vote in the State on the referendum. (See Number 41, Table I.) This Twenty-third Amendment, was annulled in April 1863, by Article XXVI—Amendments, when the vote on the referendum amounted in the State to but 16.1 per cent. of the vote cast for governor in the ensuing November. However, the major vote for the referendum amounted to 62.3 per cent. of the total vote in the State. (See Number 44, Table I.)

Article XXVIII—Amendments exempted honorably discharged soldiers and sailors of the United States from disfranchisement for pauperism or non-payment of a poll tax. This referendum, accepted at the State election of 1881, evoked a vote in the State equal to only 31.9 per cent. of the vote cast for governor at the same election. Of the vote on the referendum 60.0 per cent. was for it. (See Number 46, Table I.)

Article XXXI—Amendments, ratified November 8, 1891, relieved soldiers and sailors "receiving aid"—from the designation of "pauper." The vote on this referendum in the State, was 44.5 per cent. of the vote for governor, but the major vote was 78.8 per cent. of the vote on the referendum. (See Number 50, Table I.)

On the referendum as to the Expediency of Granting Municipal Suffrage to Women, which was defeated at the State election of 1895, the vote on the referendum, in Boston, equalled 86.8 per cent. and in the rest of the State 82.6 per cent. of the vote for governor on the same day. (See Table I, Number 56.)

Political Year and Elections.

The Constitution originally provided:

A. That Senate and House of Representatives should assemble every year on the last Wednesday of May (the beginning of the political year).

B. That the annual election for governor, lieutenant-governor and "forty persons to be councillors and senators" should be held on the first Monday in April.

C. That the annual election for representatives should be held in May, at least ten days before the last Wednesday.

D. That nine Councillors should be chosen annually on the last Wednesday in May from among the persons returned to be Senators by the joint ballot of Senators and Representatives assembled in one room.

Of the 14 amendments referred to the people on April 9, 1821, that proposed for changing the beginning of the political year to the first Wednesday in January, and the date of the State Election to the second Monday of November, evoked the largset vote, viz., 30,892, or 62.9 per cent. of the vote for governor. It was rejected, the vote against it being 54.1 per cent. of the vote on the referendum. (See Number 5, Table I.)

In 1831, Article X—Amendments was adopted at the State Election. It changed: (1) the beginning of the political year to the first Wednesday in January (as it is at present); and (2) the date of the elections of senators and representatives to the second Monday of November. The referendum called forth a vote in the State of 25,711, equal to 52.6 of the vote for governor. Of the vote on the referendum in the State, 75.6 per cent. was for it, while 57.5 per cent, of the vote in Boston was against it. (See Number 18, Table I.)

In 1855, the date of the State Election was changed to the Tuesday after the first Monday in November (as it is at present) by Article XV—Amendments, on which 19,856 votes were cast at a special election in May, or 14.5 per cent. of the vote for governor in the following November. But of the vote on the amendment 86.1 per cent. were for it. (See Number 33, Table I.)

From 1780 till 1855, when Article XIV—Amendments was adopted, a majority of all the votes cast was requisite for the election of State officers. Article XIV which is still in force provided that "in all elections of civil officers by the people of this Commonwealth . . . the person having the highest number of votes shall be deemed and declared to be elected."

The vote on the referendum amounted to 14.6 per cent. of the vote for governor in the State, and to 18.2 in Boston. The major vote on the referendum was 80.5 per cent. of the total in Boston against 73.4 per cent. in the rest of the State. (See Number 32, Table I.)

Apportionment of Senators and Representatives.

Originally the constitutional apportionment of senators was based upon the "*proportion of public taxes paid*" by the several senatorial districts; while the apportionment of representatives was based upon the number of *ratable polls* found in a town.

In 1821, an Amendment providing (1) for the reduction of the number of Senators from 40 to 36 and of the Councillors from 9 to 7—(2) the substitution of number of inhabitants for ratable polls as the basis for apportioning representatives; and (3) changing the election of Councillors from election by the General Court to election by the people, called forth a vote of 30,633, against a vote of 49,086 for governor. It was rejected, the vote against it in the State being 67.7 per cent. of the total vote; although 62.0 per cent. of the vote in Boston was for it. (See Number 8, Table I.)

In 1836, by the adoption of Article XII—Amendments, it was provided that a decennial census of *ratable polls* should be taken in May, 1837, (and every tenth year thereafter) as a basis for the apportionment of representatives. This referendum called forth a vote of 46,473, in the State, or 59.3 per cent. of the vote for governor. The per cent. of the major vote to total vote on the referendum was 74.7 in the State, but only 52.6 in Boston. (See Number 20, Table I.)

In 1840, Article XIII—Amendments was ratified by a vote of 24,884, to 4,912 in the State, the major vote being 83.5 of the total, although the vote on the referendum was only 23.4 per cent. of the vote for governor. In Boston the vote on referendum was 11.1 per cent. of the vote for governor, although 88.3 per cent. of the vote on the referendum was in its favor. (See Number 21, Table I.)

Article XIII provided for a census of the *inhabitants* in 1840, and decennially thereafter, to determine the apportionment of senators and representatives for intercensal periods of ten years.

Article XIII was amended, in 1857, by Articles XXI and XXII—Amendments which provided for a census as of May 1, 1857, of the *legal voters*, and a census in 1865, and every tenth year thereafter, of *both inhabitants and legal voters*, the number of *legal voters* in each case to determine the number of senators and representatives for the intercensal periods (as it is at present.)

The referenda on these two amendments were submitted at a special election in May, at which the vote was 29 per cent. of the total vote which was cast later at the State Election for governor. In Boston the corresponding per cent. was 35. Of the vote on these referenda, 95 per cent. was favorable in Boston; and in the State outside Boston 81.6 per cent. of the vote on Article XXI was favorable, while on Article XXIII 87.4 per cent. was favorable. (See Numbers 39 and 40, Table I.)

Election of Councillors and Other State Officers.

In 1856, by Article XVI—Amendments, provision was made for the election of eight councillors (the present number) "by the inhabitants qualified to vote for governor"; and for the division of the State into eight councillor districts, the basis of apportionment to be the *number of inhabitants* enumerated at the decennial census. (See Number 34, Table I.)

In 1856, by the adoption of Article XVII—Amendments, it was provided that the secretary, treasurer, auditor and attorney general (originally chosen by joint ballot of senators and representatives in one room) should be elected by the people at the State Election. (See Number 35, Table I.)

Qualifications for Office.

Originally, to be eligible to the office of governor, or lieutenant governor, a man had (1) to be "seized in his own right

of a freehold of the value of £1,000 and (2) to "declare himself of the Christian religion." Article VII—Amendments, in 1821, annulled the second requirement, by providing that only the simplified oath of allegiance (as specified in Article VI—Amendments adopted also in 1821) should be exacted of State Officers. (See Numbers 14 and 15, Table I.) The first requirement, as to property, remained in force till 1892, when it was annulled by Article XXXIV—Amendments. (See Number 53, Table I.) The vote in the State, on Article VI in 1821, was 54.6 per cent. of the vote for governor, and that on Article VII, 53.5. In 1892, the corresponding vote on Article XXXIV was 52.4. In 1892 the amendment was passed by a majority of more than two thirds both in Boston and the rest of the State; but in 1821, the State outside Boston voted to retain the religious test by 943 majority, while Boston voted to abolish it by 2,245 majority.

Originally only persons having a freehold estate of the value of £300 at the least, or personal estate valued at £600 or of both to the value of £600 were eligible to the office of senator or to that of councillor. Eligibility to the office of representative was conditioned on the possession of "a freehold of £100 within the town to be represented," or any ratable estate valued at £200.

By Article XIII—Amendments, adopted in 1840, all property qualifications for "holding a seat in either branch of the general court, or in the executive council were abolished." The vote on the referendum was less than 25 per cent. of the vote for governor, both in Boston and the rest of the State; but the vote for the amendment was over 80 per cent. of the vote cast thereon both in Boston and the rest of the State. (See Number 21, Table I.)

For the sake of completeness the following account of the principal stages of the popular movement which led to the Separation of Maine from Massachusetts is introduced here; because the referendum played an important part in that movement.

From the beginning of the Provincial period, in 1692, till May 15, 1820, when the District of Maine became the State

of Maine, the people of Maine formed a constituent part of the people of Massachusetts, and the voters of Maine were as much concerned *pari passu* as the voters of Massachusetts in all questions referred to the Towns by the General Court.

Agitation began in Maine as early as 1785, for the separation of that District from Massachusetts. A conference of 33 delegates from 20 towns met at Falmouth and, having organized as a Convention, agreed upon an Address to the People calling upon them to send delegates to a Convention to meet in January, 1786. The Second Falmouth Convention met accordingly on January 4, 1786, drew up a list of grievances, and called upon the Towns to vote upon a memorial to the General Court asking for separation. The Convention assembled again on June 3, 1787, when it appeared that 24 towns had voted for separation and 8 against it. Of 994 votes returned 645 were for separation and 349 against it. Williamson, in his History of Maine, says that in 1787 there were 93 towns in Maine, of which 53 were not represented at either session of the Falmouth Convention. However, the Convention sent a petition for separation to the General Court of 1787 which being duly received was referred to a committee. The General Court assumed a conciliatory attitude and passed various measures for the benefit of Maine and the agitation so far quieted down that the Falmouth Convention died of inanition in September, 1788.

In response to a Memorial of the Senators and Representatives from Maine, the General Court passed a Resolve, on March 6, 1792 (Chapter 135 Resolves 1791, January Session) authorizing the calling together of the inhabitants of Maine by the Selectmen for the purpose of giving in their votes on the question of separation,—returns to be made into the Secretary's office on or before the second Wednesday in June, 1792.

No official statement of the returns can be found, but the returns from 88 towns, plantations and districts which are preserved in the Massachusetts Archives, show that 50 voted for and 38 against separation; while the popular vote was 2,037 yeas to 2,448 nays.

Again in 1803, sixty-four towns in the District of Maine petitioned the Legislature "to take such measures as they

might deem wise and effectual for obtaining the sense of the people of said District upon the question of forming the same into a separate State." The records of the General Court do not enable one to say what reply was made to the petition of 1803. Probably some counciliatory action was taken as in 1787.

Chapter 45—Massachusetts Resolves of 1807, passed February 19, 1807, provided that "the inhabitants of Maine, qualified to vote in the choice of Representatives or Senators to the General Court" should assemble on the first Monday of May, 1807, and give in their votes on the following questions: "Shall the Senators and Representatives of the District of Maine make application to the Legislature for their consent to a separation of the District of Maine from the Commonwealth of Massachusetts, and that the same may be erected into a State?" Action was taken accordingly and the question was decided in the negative by a vote of 9,404 nays to 3,370 yeas. The total vote on the referendum, viz., 12,774 amounted to 67.8 per cent. of 18,836, the total vote for governor in 1807. The major vote on the referendum was 73.6 per cent. of the total vote.

On May 20, 1816, in accordance with Chapter 147, Massachusetts Resolves of 1816, the qualified voters of Maine again voted on the question of requesting the Legislature "to give its consent to the separation of the District of Maine from Massachusetts proper." The returns showed a majority of 6,491 for separation in a total vote of 17,075, out of a total of 37,938 qualified voters. In 1816, the total vote for governor was 28,356; therefore the vote on the referendum (which was 45.0 per cent. of the whole number of qualified voters) amounted to 60.2 per cent. of the gubernatorial vote; while the major vote on the referendum, viz., 10,584, was 62.0 per cent. of the total vote thereon.

On the strength of the vote of May 20, for separation, the Massachusetts Legislation passed Chapter 41, Acts of 1816 which authorized the inhabitants of Maine entitled to vote for senators "to choose delegates (on the first Monday in September) to a Convention to assemble at Brunswick *on the last Monday* in September, 1816." On the *first Monday of Septem-*

ber the voters were to make answer to the following question: "Is it expedient that the District of Maine shall be separated from Massachusetts and become an independent State?" The Act further reads: "And if it shall appear to said Convention that a majority of five to four at least of the votes returned are in favor of said District's becoming an independent State, then and not otherwise, said Convention shall proceed to form a constitution." Accordingly, on the first Monday of September, the voters (1) chose a Convention and (2) declared for separation by a vote of 11,969 to 10,347, the major vote being 53.6 per cent. of the total vote, 22,316. The total vote equalled 78.7 per cent. of the vote in 1816 for governor.

The Convention, although the majority for the referendum was but 1,622, in all votes cast, figured out that "the whole aggregate majorities in favor of separation was 6,031 against the whole aggregate majorities opposed of 4,409" and began the work of framing a constitution. But the Legislature decided that the Convention had misconstrued the Act; that the requisite majority of five to four in all votes cast had not been given; and that the powers of the Convention were at an end.

By Chapter 161, Acts of 1819, the Massachusetts Legislature consented to the erection of Maine into an independent State, if on the fourth Monday of July, 1819, the voters of Maine should declare their desire for separation by a majority of 1,500 in all votes cast. On August 24, 1819, the Governor of Massachusetts, in accordance with the Act issued a proclamation; (1) setting forth the results of the referendum in July—when the 17,091 votes were cast for separation and 7,132 against it; and (2) calling on the people of Maine to choose delegates to a Constitutional Convention to meet at Portland on the second Monday in October to frame a constitution and submit it to the people for ratification.

The Constitution framed by the Convention was ratified by the people, on December 6, 1819, the vote being 9,040 in favor to 796 opposed. There were 1,062 other votes (985 yeas and 77 nays) thrown out as not legally returned. The Constitution took effect on March 15, 1820.

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The total vote on the referendum of July 1819, viz., 24,223 amounted to 101.9 per cent. of 23,763 the vote cast for governor in May 1819; while the total vote in December on ratifying the constitution, viz., 9,836 amounted to only 41.4 per cent. of that vote. If the 1,062 votes thrown out, which were mostly tardy returns, are included, the vote on ratification amounted to only 45.0 per cent. of the vote for governor; but it is fair to suppose that the conditions in July were more favorable "to getting out the vote" than they were in December.

Of the total vote on the referendum in July, the major vote amounted to 70.6 per cent. Of the total vote cast on ratification, viz., 9,836, the major vote equalled 91.9 per cent.

According to the third Federal Census, Massachusetts had 523,287 inhabitants in 1820, and 7,800 square miles of Territory; and Maine had 298,335 inhabitants and 42,800 square miles of territory. Therefore, by the separation of Maine from Massachusetts the latter parted with 36.3 per cent. of her population and 84.6 per cent. of her territory.

It may be noted that the question of consenting to the erection of Maine into an independent State was not submitted to the people of Massachusetts proper. Furthermore, when on June 16, 1819, a motion was made in the House of Representatives to amend the Bill (which on June 19, became —Chapter 161, Acts of 1819) "so as to take the opinion of the whole Commonwealth," it was rejected by 168 nays to 83 yeas. On June 17, the vote on engrossment was 193 yeas to 59 nays.

The Maine Constitution of 1820 although modelled in general upon the Massachusetts Constitution of 1780, was a more liberal and democratic instrument in certain respects. Thus, it contained no provision for the public support of the the clergy,—Protestant or other. The address put forth by the Convention, in recommending the Constitution to the people, characterized the doctrine embodied in the much controverted Article III of the Massachusetts Bill of Rights, as one "which though *professing much* is utterly *nugatory in practice.*" The Constition made members of the Council elective, by both branches of the Legislature, from among the

people; and based the apportionment of senators upon population, instead of upon the proportionate amount of taxes paid by the several districts. It contained no property or religious qualifications for voting or holding office. The office of Lieutenant Governor was omitted. It obviated the necessity of calling a Constitutional Convention by providing that proposed articles of amendment to the organic law should be submitted to the people if previously passed by both branches of the Legislature.

The per cent. of votes cast in a contest, or on a referendum, to the votes that might have been cast had all the registered voters voted, *i. e.*, the per cent. of the actual to the possible vote may be termed for convenience, the Per Cent. of Interest. When the Per Cent. of Interest can be determined it appears to the writer to constitute the most satisfactory criterion whereby to estimate the relative interest of voters in respect to referenda and electoral contests. But as has been stated already, the Per Cent. of Interest shown by the voters of Massachusetts before 1890 cannot be determined without enormous labor.

As much interest attaches to the relative interest taken by the electorate in referenda and contests for office, the writer proposes to follow the present study of Constitutional Referenda with an article to be published in a subsequent number of these Publications on the Relative Interest Shown by the voters of Massachusetts and Boston in Referenda and Contests for Office, 1890–1910.

REVIEWS AND NOTES.

MORTALITY OF SEAMEN IN MERCHANT VESSELS OF THE UNITED KINGDOM, 1885–1908.

It is apparently impossible at the present time to secure accurate information on the subject of mortality at sea in vessels registered in the United States. Even the statistics of mortality in the United States Navy have very serious limitations due in part to the fact that proper account is not taken of those discharged while seriously ill, or of those voluntarily leaving the service because of sickness. In contrast to the conditions in the United States, the statistics of shipping casualties to vessels registered in the United Kingdom are reported in great detail to the Board of Trade. In these annual reports, besides a mass of excellently classified detail statistics, there are summary tables containing the more important figures for a period of years and cartographs which indicate where the various casualties occurred. In the detail tables distinction is made of sailing and steam vessels; vessels meeting with casualties at home and abroad; in rivers and harbors and at sea; and of casualties to fishing vessels, yachts, and pleasure boats. The nature of the casualties are classified as founderings, strandings, collisions, ships missing, and other; and the various causes of the different kinds of casualties are also distinguished.

In certain of the statistical tables the locality in which the accident occurred is specified together with the loss of life with distinction of crew and passengers. The age of the vessels meeting with accidents is reported and the kind of material from which they were constructed—whether principally of iron, steel, wood, or a composite of materials.

In important accidents to British shipping formal inquiry is made to determine all the ascertainable particulars, if it is thought that such an inquiry would serve a public interest, and preliminary inquiry is held into the circumstances attending every casualty. In this respect the methods are very similar to those followed by the Board of Trade in its determination of the causes of railway accidents. In either case the statistics have greater significance from the fact that they are carefully scrutinized.

From these brief statements it is evident that the annual reports of the Marine Department of the Board of Trade entitled "Abstracts of the Returns made to the Board of Trade of Shipping Casualties" contain a mass of statistical information of great practical value to life, accident, and marine insurance interests.

That men employed as seamen in ocean-going vessels are exposed to considerable accident liability and that their general mortality from all causes is comparatively high is clearly indicated in the following table,

and that the mortality, both from accident and disease, is considerably higher for seamen on sailing vessels than for seamen on steam vessels is also conclusively proven by the table:

TABLE I.

COMPARATIVE MORTALITY OF CREWS IN OCEAN-GOING, BRITISH VESSELS, 1885-1908.

MORTALITY FROM ACCIDENT.

Years Ending June 30.	Sailing Vessels.		Steam Vessels.		Total.	
	Number of Deaths.	Death Rate per 1,000 Employees.	Number of Deaths.	Death Rate per 1,000 Employees.	Number of Deaths.	Death Rate per 1,000 Employees.
1885.....	785	9.7	724	6.7	1,509	8.0
1886.....	919	11.4	263	2.4	1,182	6.3
1887.....	912	12.2	657	6.5	1,569	8.9
1888.....	967	13.8	671	6.5	1,638	9.5
1889.....	858	12.9	506	4.6	1,364	7.8
1890.....	717	11.1	629	5.4	1,346	7.4
1891.....	1,028	16.6	511	4.2	1,539	8.4
1892.....	925	15.2	466	3.7	1,391	7.4
1893.....	725	11.8	395	3.1	1,120	5.9
1894.....	852	14.4	736	5.6	1,588	8.4
1895.....	804	14.2	462	3.5	1,266	6.7
1896.....	862	16.0	565	4.4	1,427	7.8
1897.....	587	11.5	573	4.4	1,160	6.4
1898.....	392	8.3	323	2.4	715	4.0
1899.....	554	12.8	764	5.7	1,318	7.4
1900.....	407	9.9	501	3.6	908	5.1
1901.....	606	15.7	477	3.4	1,083	6.0
1902.....	408	11.2	441	3.0	849	4.7
1903.....	280	8.0	409	2.7	689	3.7
1904.....	400	12.1	252	1.6	652	3.5
1905.....	364	11.7	369	2.4	733	3.9
1906.....	365	12.9	347	2.2	712	3.8
1907.....	219	8.3	392	2.4	611	3.2
1908.....	295	12.2	274	1.6	569	3.0
Total.....	15,320		13,210		28,530	

TABLE I.—*Continued.*

COMPARATIVE MORTALITY OF CREWS IN OCEAN-GOING, BRITISH VESSELS, 1885-1908.

MORTALITY FROM DISEASE.

Years Ending June 30.	Sailing Vessels.		Steam Vessels.		Total.	
	Number of Deaths.	Death Rate per 1,000 Employees.	Number of Deaths.	Death Rate per 1,000 Employees.	Number of Deaths.	Death Rate per 1,000 Employees.
1885.....	200	2.5	231	2.1	431	2.3
1886.....	234	2.9	291	2.7	525	2.8
1887.....	202	2.7	215	2.1	417	2.4
1888.....	209	3.0	265	2.6	474	2.7
1889.....	209	3.1	218	2.0	427	2.4
1890.....	206	3.2	259	2.2	465	2.6
1891.....	203	3.3	267	2.2	470	2.5
1892.....	220	3.6	372	2.9	592	3.2
1893.....	152	2.5	210	1.6	362	1.9
1894.....	164	2.7	284	2.2	448	2.3
1895.....	182	3.2	274	2.1	456	2.4
1896.....	173	3.2	266	2.0	439	2.4
1897.....	135	2.7	263	2.0	398	2.2
1898.....	160	3.4	240	1.8	400	2.2
1899.....	149	3.4	249	1.9	398	2.2
1900.....	128	3.1	339	2.5	467	2.6
1901.....	112	2.9	324	2.3	436	2.4
1902.....	119	3.3	318	2.2	437	2.4
1903.....	105	3.0	292	1.9	397	2.1
1904.....	80	2.4	270	1.8	350	1.9
1905.....	103	3.3	274	1.8	377	2.0
1906.....	64	2.2	281	1.8	345	1.8
1907.....	50	1.9	299	1.8	349	1.8
1908.....	52	2.1	355	2.1	407	2.1
Total.....	3,630		9,826		13,456	

TABLE I.—*Concluded.*

COMPARATIVE MORTALITY OF CREWS IN OCEAN-GOING, BRITISH VESSELS, 1885-1908.

MORTALITY FROM ACCIDENT AND DISEASE.

Years Ending June 30.	Sailing Vessels.		Steam Vessels.		Total.	
	Number of Deaths.	Death Rate per 1,000 Employees.	Number of Deaths.	Death Rate per 1,000 Employees.	Number of Deaths.	Death Rate per 1,000 Employees.
1885.....	985	12.2	955	8.8	1,940	10.3
1886.....	1,153	14.2	554	5.1	1,707	9.0
1887.....	1,114	15.0	872	8.5	1,986	11.3
1888.....	1,176	16.8	936	9.0	2,112	12.2
1889.....	1,067	16.0	724	6.6	1,791	10.2
1890.....	923	14.3	888	7.6	1,811	10.0
1891.....	1,231	19.8	778	6.4	2,009	10.9
1892.....	1,145	18.8	838	6.6	1,983	10.6
1893.....	877	14.3	605	4.7	1,482	7.8
1894.....	1,016	17.1	1,020	7.9	2,036	10.8
1895.....	986	17.4	736	5.7	1,722	9.2
1896....	1,035	19.2	831	6.4	1,866	10.2
1897.....	722	14.2	836	6.4	1,558	8.6
1898.....	552	11.7	563	4.3	1,115	6.2
1899.....	703	16.2	1,013	7.6	1,716	9.6
1900.....	535	13.0	840	6.2	1,375	7.8
1901.....	718	18.5	801	5.7	1,519	8.5
1902.....	527	14.5	759	5.2	1,286	7.1
1903.....	385	11.0	701	4.6	1,086	5.8
1904.....	480	14.5	522	3.4	1,002	5.4
1905.....	467	15.0	643	4.1	1,110	6.0
1906.....	429	15.1	628	4.0	1,057	5.6
1907.....	269	10.2	691	4.2	960	5.0
1908.....	347	14.3	629	3.7	976	5.0
Total.....	18,950		23,036		41,986	

The above table requires little comment, but particular attention may be called to the variable character of the data from year to year. For example, the fatal accident rate of seamen on sailing vessels has varied during the twenty-four year period from 16.6 per 1,000 employed in 1891 to 8.0 in 1903. The fluctuations in the accident mortality of seamen on steam vessels have also been numerous and relatively wide. The mortality from natural causes, while apparently low, probably is not so in reality. It must be remembered that the figures relate only to deaths which occur on board ship and the complete mortality is not ascertainable from these returns. For purposes of comparing one year with another or sailing with steam vessels the statistics are, however, suggestive and instructive.

In this table the mortality of seamen in fishing vessels at sea and in all shipping in rivers and harbors is excluded. During the 24-year period 6,258 lives were reported lost by accident in fishing vessels of the United Kingdom and 550 by disease, or a total of 6,808. During the same period the loss of life to seamen employed on shipping, other than fishing vessels in rivers and harbors, was as follows: 9,390 by accident, 14,095 by disease, making a total of 23,485. The aggregate loss of life to seamen in all classes of vessels registered in the United Kingdom was 72,279 during the twenty-four years ended June 30, 1908, and of that total, 44,178 were of seamen employed on sailing vessels and 28,101 were of seamen employed on steam vessels.

Other statistics of loss of life among British seamen are of considerable value by reason of the fact that the specific occupations of the decedents are stated. Unfortunately, actual death rates cannot be calculated from the returns because the numbers employed are not given in corresponding detail, for the year 1908, the last census return being for April 4, 1906. The following table compiled from the latest available report and pertaining to the year 1908 are presented as a further indication of the excellent manner in which certain facts, not ascertainable in this country, are recorded in Great Britain:

TABLE II.

MORTALITY OF BRITISH SEAMEN* BY SPECIFIED OCCUPATIONS.

(YEAR ENDED JUNE 30, 1908.)

Occupations.	Deaths from Accidents.			Deaths from Disease.			Deaths from All Causes.		
	In Sailing Vessels.	In Steam Vessels.	Total.	In Sailing Vessels.	In Steam Vessels.	Total.	In Sailing Vessels.	In Steam Vessels.	Total.
Masters	31	16	47	14	25	39	45	41	86
Mates	39	36	75	10	50	60	49	86	135
Boatswains, etc	9	26	35	2	16	18	11	42	53
Carpenters, etc	8	8	16	4	19	23	12	27	39
Sailmakers	6	—	6	7	1	8	13	1	14
Quartermasters	—	3	3	—	9	9	—	12	12
Lamp Trimmers	—	8	8	—	9	9	—	17	17
Able Seamen	145	147	292	46	146	192	191	293	484
Ordinary Seamen	32	29	61	5	8	13	37	37	74
Sailors Undefined	26	25	51	2	23	25	28	48	76
Apprentices	28	16	44	2	5	7	30	21	51
Boys	3	2	5	1	3	4	4	5	9
Engineers	—	60	60	—	77	77	—	137	137
Firemen	—	118	118	—	213	213	—	331	331
Trimmers	—	9	9	—	33	33	—	42	42
Donkeymen	—	20	20	—	16	16	—	36	36
Oilmen and Greasers	—	2	2	—	6	6	—	8	8
Other Employees in Engineer's Department	—	—	—	—	3	3	—	3	3
Surgeons	—	—	—	—	3	3	—	3	3
Pursers, etc	—	3	3	—	5	5	—	8	8
Cooks, Stewards, etc	28	55	83	12	148	160	40	203	243
Stewardesses, etc	—	1	1	—	4	4	—	5	5
Cattlemen, etc	—	—	—	—	5	5	—	5	5
Other Employees	2	2	4	—	5	5	2	7	9
Not Stated	—	5	5	—	—	—	—	5	5
Lascars	—	51	51	—	376	376	—	427	427
Total	357	642	999	105	1,208	1,313	462	1,850	2,312

*Exclusive of those lost in yachts and fishing vessels.

From this table it is clear that all seamen, no matter what their rank may be, or whether they ship on sailing or steam vessels, are subject to a very real extra, or above-normal, fatal accident liability. During the single year, which was a favorable one, there were 47 masters and 75 mates drowned in wrecks or otherwise killed by accidents while at sea. Only three out of the twenty-four specified occupations had no reported deaths from accident during the year. In a future note it will be possible to furnish average fatal accident and death rates, by employments, for a period of at least ten years.

During the 25 years ending June 30, 1908, no less than 11,520 vessels, registered in the United Kingdom and exclusive of His Majesty's ships, were totally lost. Of this total, 8,409 were sailing vessels and 3,111 were steam. During the same period, 6,154 sailing and 553 steam vessels belonging to British possessions abroad were reported totally lost. During the 25-year period, therefore, 14,563 sailing and 3,664 steam vessels, or a grand total of 18,227 vessels of all kinds, with an aggregate tonnage of 5,419,500, were reported totally lost to the United Kingdom and her possessions abroad.

Some of the more important wrecks of vessels registered in the United Kingdom have been the following: during 1894–'95, 1,150 Chinese soldiers were drowned by the sinking of the *Kow Shing*, of London; in 1895–'96, 247 lives were lost on the *Drummond Castle* and 277 by the wreck of the *On Wow*, of London; in 1901–'02, the *S. S. Camorta*, of Glasgow, was lost with a crew of 82 (including 73 lascars) and 655 passengers; in 1905–'06, the wreck of the *Hilda* cost the lives of the crew of 27 and 104 passengers; and during the season of 1906–'07, the *S. S. Berlin* was lost with her crew of 46 and 86 passengers, and the *S. S. Santiago* with a crew of 82 and 5 passengers.

Some of the more important wrecks of merchant vessels belonging to British possessions abroad which have occurred in recent years were as follows: in May, 1902, the *S. S. Roraima*, of Quebec, was wrecked by the volcanic eruption at St. Pierre, the crew of 40 and 40 passengers being lost; during the year 1902–'03, the *Seang Leong*, of Rangoon, with a crew of 91 and 214 passengers; during 1905–'06, the *S. S. Hashemi*, of Bombay, was reported missing with a crew of 76; and in 1906–'07, the *S. S. Albatross*, of Hong Kong, with a crew of 12 and 146 passengers, and the *S. S. Charterhouse*, of Singapore, with a crew of 26 and 66 passengers.

During the year ended June 30, 1908, 5,543 casualties were reported to British vessels registered in the United Kingdom. Of this total, 306 represented vessels totally lost and 1,402 others were classed as serious. Of the 306 vessels lost during the year, 198 were sailing vessels and 108 were steam vessels. Of these totals, 32 sailing and 18 steam vessels foundered; 112 sailing and 58 steam vessels stranded; 37 sailing and 19 steam vessels were lost by collision; 9 sailing and 5 steam vessels were lost through other causes; and 8 sailing and 8 steam vessels were reported missing.

In conclusion, it may be said that the English marine statistics show

that there has been a very noticeable decline in the total-loss rate of ships, both sailing and steam, but this has not been accompanied by an equally pronounced decline in the fatal accident liability of seamen. The fatal accident liability of seamen on steamships has declined considerably in recent years, but, one year with another, the fatal accident rate of seamen on sailing ships is still relatively high, being usually above 10 per 1,000 exposed to risk for an average period of a year.

The English reports on casualties to shipping are indispensable to any well conducted marine insurance office, and that equally good returns for American seamen and shipping are not available is a fact much to be regretted by insurance interests the world over.

FREDERICK S. CRUM.

The *Giornale degli Economisti* has set aside a separate department under the caption of "*Rivista di Statistica*" for the publication of articles and notes relating to statistical subjects. The new department, which was inaugurated in the number for January, 1910, is under the editorship of Professors A. Beneduce and G. Mortara. The name of the journal is now *Giornale degli Economisti e Rivista di Statistica*.

The *Precis du Cours du Statistique* of Armand Julin (Brussells: Misch & Thron; Paris: Riviere, 1910) is an outline of the lectures on statistics which the author, who is well known as the director of the Belgian *Office du Travail*, has given at the Higher Commercial Institute of Antwerp. The volume deals for the most part with the technique of statistical administration. Such matters as the supervision of enumerations and other inquiries, the preparation of schedules, and the tabulation, analysis, and publication of results are discussed in an instructive and authoritative fashion. One notes, however, that M. Julin finds it as difficult as other writers have to frame general rules of statistical practice that will be of much help to one whose ingenuity and discretion are tried by the complex difficulties of a concrete statistical problem. In the second half of the volume, which is devoted to "applied statistics," there are excellent discussions of occupational censuses and of the statistics of international commerce.

The *Jahrbuch der Statistik* is planned by its editor, Dr. H. Platzer, director of the Statistical Bureau of Alsace-Lorraine, as an annual international review of statistical administration and of the organization of statistical science. The first number (Strassburg: Trübner, 1909) contains: (1) a directory of national and local statistical officers and offices, together with a list of the chief regular publications of the latter; (2) a list of statistical societies; (3) a register of the instructors in economics and statistics in universities and other institutions of higher education; (4) a bibliography of academic and other unofficial periodicals in the fields

of economics, finance, and statistics; (5) an outline of the proceedings of the latest meetings of the International Statistical Institute and the International Congress for Hygiene and Demography; (6) an account of recent changes in the organization of statistical bureaus in Germany and of the movement for the establishment of an international bureau of statistics; and (7) an index of names. The book was evidently hastily compiled. Much of the information relating to statistical affairs in other countries than Germany is antiquated and some of it, especially so far as the United States is concerned, is entirely erroneous. The bibliographical information is not at all accurate, and the academic directory is evidently taken over bodily from *Minerva*. The general plan of the book, however, is such as to make it of real utility to all users of statistical source material, and it is to be hoped that its publication may be continued.

The first part of the third volume of Professor G. von Mayr's monumental *Statistik und Gesellschaftslehre* has been published (Tübingen: Mohr, 1909). The first volume, dealing with statistical theory, appeared in 1895, and the second, on population statistics, in 1897. The present installment includes a portion of the field of *Moralstatistik*. For the completion of the work two additional installments are planned, which will contain the remaining chapters on *Moralstatistik*, together with the treatments of cultural, economic, and political statistics. Professor von Mayr's discussion of *Moralstatistik* is as thorough and as relentlessly systematic as are his earlier volumes, while the increased richness of his bibliographies reflects the rapid advance of statistical investigations during the last two decades. A more or less arbitrary line is drawn between matters which are primarily *Moralstatistiches* (such as divorce and suicide), and other topics which fall in the first instance under the rubric of *Bevolkerungstatistik* but which have also an ethical import. The present installment, with the exception of an important chapter on the statistics of divorce, is devoted to this latter field of the *Sekundar-Moralstatistischen*. All the more important classes of statistics relating to the structure and movement of the population are reviewed, but the emphasis is consistently placed on "morphological abnormalities," — deviations, and more particularly notable deviations, from the norm or average. It may be doubted whether all of the matters discussed should be properly classed under the head of *Moralstatistik*, but there can be no disagreement as to the interest and value of von Mayr's discussion of population statistics from this important and (for systematic statistics) novel viewpoint. Special attention may be called to the discussion of the diminishing birth rate, which is possibly the best general treatment of this topic.

ALLYN A. YOUNG.

LUIGI BODIO.

At the twelfth session of the International Statistical Institute held in Paris in the summer of 1909, July 3–10, Luigi Bodio was unanimously elected to the presidency left vacant by the death of von Inama-Sternegg, November, 1908. Through his official and private publications, as well as through his active connection with the International Statistical Institute since its foundation in 1885, M. Bodio's reputation as a statistician and economist has become well established on both sides of the Atlantic. A brief review of his life and principal writings may be of interest at this time to American statisticians.

Luigi Bodio was born October 12, 1840, in Milan, where he completed his primary and secondary studies. His university studies were carried on at Pavia and at Pisa. After receiving the degree of doctor of laws from the University of Pisa in 1861, he was granted a traveling pension by the government to continue his studies in statistics and economics. About a year (1862–63) was spent in Paris where he came to know many men eminent in the field to which he had decided to devote himself. Among these was Emile Levasseur, for whom M. Bodio has since repeatedly expressed the greatest admiration and affection. He was at that time a professor at the Lycée St. Louis. In 1864, after his return to Italy, M. Bodio became Professor of Commercial Law and Political Economy in the Technical Institute at Leghorn and a little later went to Milan to occupy a similar position in the Technical Institute of that city. In 1868, he went to Venice to become Professor of Commercial Geography and Statistics in the High School of Commerce. The year 1872 marks his first official connection with the government statistics of Italy; in that year he was called to Rome to become Secretary of the Statistical Bureau of the Ministry of Agriculture, Industry and Commerce, and was soon made chief of the bureau succeeding Pietro Maestri. In 1878, the bureau was raised to the grade of an office (direzione generale) and from that time until 1898 M. Bodio was the Director-General and, by virtue of his office, a member of the superior council of statistics and president of the permanent committee, which were established in 1887 in an effort to reorganize official statistics. On being chosen Councillor of State in 1898, he resigned his office of Director-General of Statistics although for three years he acted as Commissioner General of Emigration, being engaged in that capacity in important statistical work. M. Bodio's active connection with Italian official statistics did not cease with his resignation from the position of Director-General; he has ever since been president of the superior council of statistics. In 1909, he was retired from the active service of Councillor of State with the honorary title of President of Section.

As Director-General of Statistics M. Bodio raised Italian statistics, particularly statistics of population and emigration and crime to a high level. The numerous publications of the Statistical Bureau during this

period were prepared with the greatest care. Among these are the censuses of 1871 and 1881, the Annali di statistica and the Annuario statistico Italiano. As Director-General of Statistics M. Bodio has performed a great service in training a group of younger statisticians who have already proved their worth.

In founding the International Statistical Institute in 1885, he was one of the prime movers. He had previously written much on international statistics and had frequently urged the importance of forming an international association which should be independent of any government and which should choose its members, regardless of geographical distribution, from the greatest statisticians of the world. The occasion of the jubilee meeting of the Royal Statistical Society at London in 1885, seemed opportune to those interested in the project and the International Statistical Institute was formed with Sir Rawson Rawson as its president and M. Bodio as secretary-general. M. Bodio rendered his services in this capacity until 1905 when, to the great regret of the Institute, he felt it necessary to resign owing, as he said in a letter to President von Inama-Sternegg,* to the pressure of his duties in the Council of State and to the fact that he no longer had charge of a statistical office which he could use in the work of editing the bulletin and other publications. He was made Honorary Secretary-General and in the Paris session of 1909 was unanimously elected President. In 1893, at the time of the Chicago Exposition, the International Statistical Institute held its session at Chicago and M. Bodio took the opportunity to spend two months in this country.

Although he is now retired from active work in official statistics his services are still generously rendered to his country through his various connections with the government, and to the world at large through his activity in statistical or economic societies. At present he is President of the Council of Emigration, President of the Council of Statistics, Vice-president of the Geographical Society, Vice-president of the Dante Alighieri Society, and life senator (since 1900). He has been honored by elections to numerous scientific societies and has been the recipient of various decorations, among which may be enumerated: Member of the Royal Academy dei Lincei, corresponding member of the Institut de France (Académie des sciences morales et politiques), Grande croix de l'ordre italien des Saints Maurice et Lazare, Chevalier de l'ordre du mérite civil de Savoie, Commandeur de la Legion d'honneur (France), Grande croix de l'ordre de la Couronne Royale du Peuple, etc.

On account of his public duties M. Bodio has not had leisure for much writing outside of official publications and contributions to various periodicals, particularly the "Bulletin" of the International Statistical Institute. He has rather chosen to render his services to science by assisting other writers on statistical and economic subjects and by improving and extending official researches and publications. He has, however, written several valuable works, among which the most important are: "Saggio sul commercio externo terrestre e marittimo del Regno d'Italia

* Bulletin de l'institut, vol. 15, part 2, p. 19.

negli anni 1862 ed 1863" (1865); "Sui documenti statistici del Regno d'Italia. Cenni bibliografici presentati al VI congresso internazionale di statistica" (1867); "L'Italia economica nel 1873, (written in collaboraion with various Italian economists and scientists. 2 vols., 2nd ed. 1874); and "Di alcuni indici misuratori del movimento economico in Italia" (Rev. 2nd ed. 1891).

After correspondence with the most extensive libraries in the East, it has been possible to secure of these four works only the "Di alcuni indici misuratori del movimento economico in Italia," and the two volumes of "L'Italia economica nel 1873." It has, consequently, been necessary to abandon the plan of giving a résumé of M. Bodio's most important works. It may, however, be of service to American readers to mention such of M. Bodio's works as may be found in Eastern libraries.

Library of Congress:

Del movimento della popolazione in Italia e in altri stati d'Europa. (Estratto dall' archivio di statistica.) 1876.

Di alcuni indici misuratori del movimento economico in Italia. (Rev. 2nd ed. 1891.)

Di una statistica sommaria delle opere pie esistendi in Italia nel 1878. (Estratto dall' archivio di'statistica.) 1880.

Saggio di bibliografia statistica. (3 editions, 1883, 1885, 1890.)

Statistica dell' emigrazione Italiana all' estero nel 1881, confrontata con quella degli anni precedenti e coll' emigrazione avvenuta da altri stati. (1882.)

Cornell University Library:

Sulla condizioni dell' emigrazione Italiana. (1886.)

Sopra "il socialismo cristiano." (1885.)

Saggio di bibliografia statistica. (1885.)

Poor Relief in Italy. (A chapter of a book by Eminghaus, "Poor Relief in Various Parts of Europe.")

Boston Public Library:

L'Italia economica nel 1873. 2 vols. (1874.)

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